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Common Criteria for Information Technology Security Evaluation

Part 2 : Security functional requirements

3 April 1998

Version 2.0 Semi-Final

CCIB-98-017

Foreword

The CC Project Sponsoring Organisations are pleased to provide this **version 2.0 semi-final** of the *Common Criteria for Information Technology Security Evaluation*. This version is being submited by the CC project to ISO/IEC, JTC 1, SC27/WG3 for consideration as a draft international standard. The final release of CC version 2.0 will be prepared jointly with ISO representatives at the April 1998 meeting of SC27/WG3 in Stockholm, Sweden.

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1 Introduction

1.1 Scope

Security functional components, as defined in this Part 2, are the basis for the TOE IT security functional requirements expressed in a Protection Profile (PP) or a Security Target (ST). These requirements describe the desired security behaviour expected of a Target of Evaluation (TOE) and are intended to meet the security objectives as stated in a PP or an ST. These requirements describe security properties that users can detect by direct interaction with the TOE (i.e. inputs, outputs) or by the TOE's response to stimulus.

Security functional components express security requirements intended to counter threats in the assumed operating environment of the TOE and/or cover any identified organisational security policies and assumptions.

The audience for Part 2 includes consumers, developers, and evaluators of secure IT systems and products. Part 1 chapter 3 provides additional information on the target audience of the Common Criteria (CC), and on the use of the CC by the groups that comprise the target audience. These groups may use Part 2 as follows:

- Consumers who use Part 2 when selecting components to express functional requirements to satisfy the security objectives expressed in a PP or ST. Part 1 chapter 4.3 provides more detailed information on the relationship between security objectives and security requirements.
- Developers, who respond to actual or perceived consumer security requirements in constructing a TOE, may find a standardised method to understand those requirements in this part. They can also use the contents of this part as a basis for further defining the TOE security functions and mechanisms that comply with those requirements.
- Evaluators, who use the functional requirements defined in this part in verifying that the TOE functional requirements expressed in the PP or ST satisfy the IT security objectives and that all dependencies are accounted for and shown to be satisfied. Evaluators also should use this part to assist in determining whether a given TOE satisfies stated requirements.

1.1.1 Extending and maintaining functional requirements

The CC and the associated security functional requirements described herein are not meant to be a definitive answer to all the problems of IT security. Rather, the CC offers a set of well understood security functional requirements that can be used to create trusted products or systems reflecting the needs of the market. These security functional requirements are presented as the current state of the art in requirements specification and evaluation.

This part does not presume to include all possible security functional requirements but rather contains those that are known and agreed to be of value by the CC sponsoring organisations at the time of release.

Since the understanding and needs of consumers may change, the functional requirements in this part will need to be maintained. It is envisioned that some PP/ST authors may have security needs not (yet) covered by the functional requirement components in the Common Criteria. In those cases the PP/ST author may choose to consider using functional requirements not taken from the CC (referred to as extensibility), as explained in part 1 annexes B and C.

1.2 Organisation of Part 2

Chapter 1 is the introductory material for Part 2.

Chapter 2 introduces the catalogue of CC functional components while Chapters 3 through 14 describe the functional classes.

Annex A provides additional information of interest to potential users of the functional components. It is a repository for informative supporting material for the users of this part, which may help them to apply relevant operations and select appropriate audit or documentation information.

Annex B provides the Common Criteria observation report guidance, example observations and an example printed form.

Those who author PPs or STs should refer to Part 1 for relevant structures, rules, and guidance:

- Part 1, Chapter 2 defines the terms used in the CC.
- Part 1, Annex B defines the structure for PPs.
- Part 1, Annex C defines the structure for STs.

1.3 Functional requirements paradigm

This section describes the paradigm used in the security functional requirements of Part 2. Figures 1.1 and 1.2 depict some of the key concepts of the paradigm. This section provides descriptive text for those figures and for other key concepts not depicted. Key concepts discussed are highlighted in bold/italics. This section is not intended to replace or supersede any of the terms found in the CC glossary in Part 1, Chapter 2.

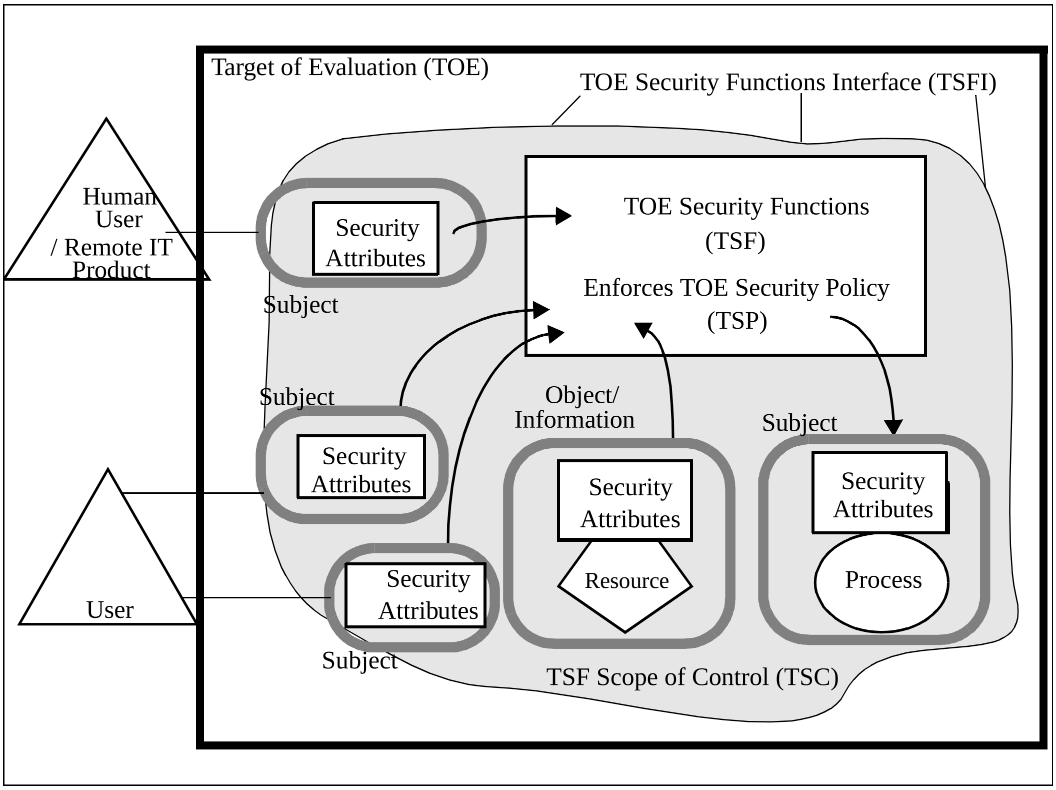
Target of Evaluation (TOE)
TOE Security Functions Interface (TSFI)
Human User / Remote IT Product
Security Attributes
Subject
TOE Security Functions (TSF)
Enforces TOE Security Policy (TSP)
Subject
Security Attributes
Object/ Information
Subject
User
Security Attributes
Subject
Security Attributes
Resource
Security Attributes
Process
TSF Scope of Control (TSC)

Figure 1.1 - Security functional requirements paradigm (Monolithic TOE)

This part 2 is a catalogue of security functional requirements that can be specified for a ***Target of Evaluation (TOE)***. A TOE is an IT product or system containing resources such as electronic storage media (e.g. disks), peripheral devices (e.g. printers), and computing capacity (e.g. CPU time) that can be used for processing and storing information and is the subject of an evaluation.

TOE evaluation is concerned primarily with ensuring that a defined ***TOE Security Policy (TSP)*** is enforced over the TOE resources. The TSP defines the rules by which the TOE governs access to its resources, and thus all information and services controlled by the TOE.

The TSP is, in turn, made up of multiple ***Security Function Policies (SFPs)***. Each SFP has a scope of control, that defines the subjects, objects, and operations controlled under the SFP. The SFP is implemented by a ***Security Function (SF)***, whose mechanisms enforce the policy and provide necessary capabilities.

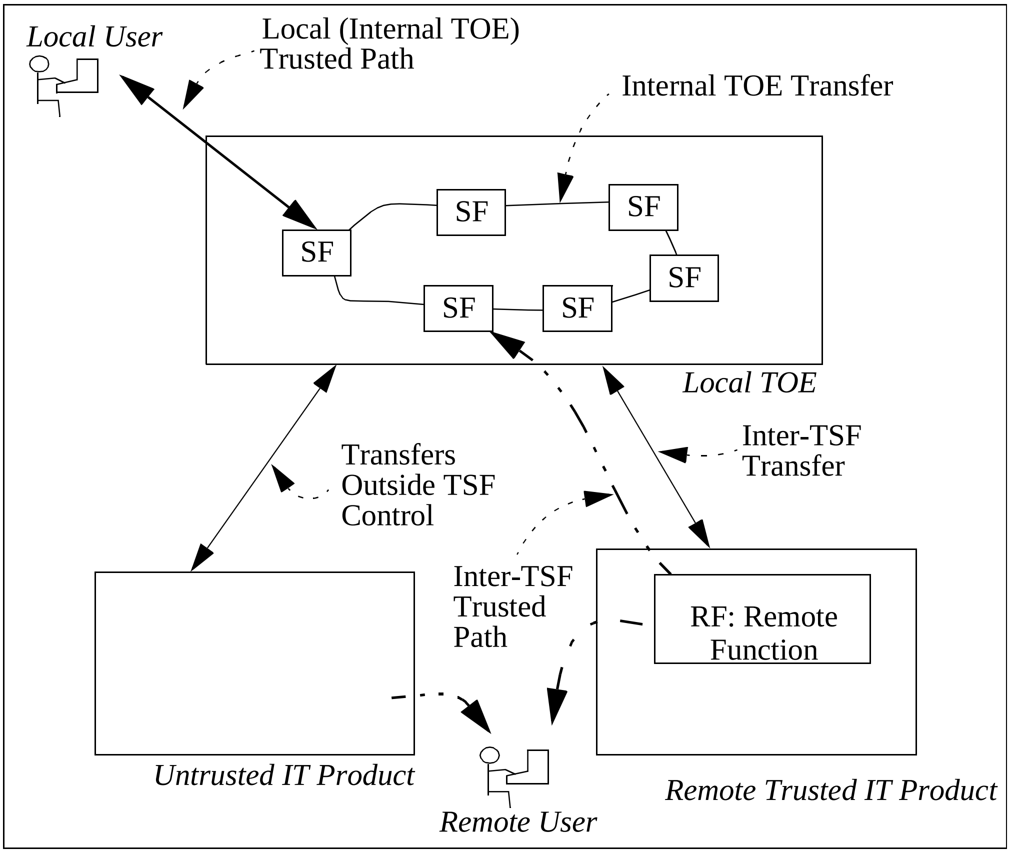

Figure 1.2 - Diagram of security functions in a distributed TOE

Those portions of a TOE that must be relied on for the correct enforcement of the TSP are collectively referred to as the ***TOE Security Functions (TSF)***. The TSF consists of all hardware, software, and firmware of a TOE that either directly enforce or contribute to the enforcement of the TSP.

A ***reference monitor*** is an abstract machine that enforces the access control policies of a TOE. A ***reference validation mechanism*** is an implementation of the reference monitor concept that possesses the following properties: tamperproof, always invoked, and simple enough to be subjected to thorough analysis and testing. The ***TSF*** may consist of a reference validation mechanism and/or other security functions necessary for the operation of the TOE.

The TOE may be a monolithic product containing hardware, firmware, and software.

Alternatively a TOE may be a distributed product that consists internally of multiple separated parts. Each of these parts of the TOE provides a particular service for the TOE, and is connected to the other parts of the TOE through an ***internal communication channel***. This channel can be as small as a processor bus, or may encompass a network internal to the TOE.

When the TOE consists of multiple parts, each part of the TOE may have its own part of the TSF which exchanges user and TSF data over internal communication channels with other parts of the TSF. This interaction is called ***internal TOE transfer***. In this case the separate parts of the TSF abstractly form the composite TSF, which enforces the TSP.

TOE interfaces may be localised to the particular TOE, or they may allow interaction with other IT products over ***external communication channels***. These external interactions with other IT products may take two forms:

a) The security policy of the ‘Remote Trusted IT product’ and the TSP of the local TOEs have been administratively coordinated and evaluated. Exchanges of information in this situation are called ***inter-TSF transfers***, as they are between the TSFs of distinct trusted products.

b) The remote IT product may not be evaluated, indicated in Figure 1.2 as ‘untrusted IT product’, therefore its security policy is unknown. Exchanges of information in this situation are called ***transfers outside TSF control***, as there is no TSF (or its policy characteristics are unknown) on the remote IT product.

The set of interactions that can occur with or within a TOE and are subject to the rules of the TSP is called the ***TSF Scope of Control (TSC)***. The TSC encompasses a defined set of interactions based on subjects, objects, and operations within the TOE, but it need not encompass all resources of a TOE.

The set of interfaces, whether interactive (man-machine interface) or programmatic (application programming interface), through which resources are accessed that are mediated by the TSF, or information is obtained from the TSF, is referred to as the ***TSF Interface (TSFI)***. The TSFI defines the boundaries of the TOE functions that provide for the enforcement of the TSP.

Users are outside of the TOE, and therefore outside of the TSC. However, in order to request that services be performed by the TOE, users interact with the TOE through the TSFI. There are two types of users of interest to the Part 2 security functional requirements: ***human users*** and ***external IT entities***. Human users are further differentiated as ***local human users***, meaning they interact directly with the TOE via TOE devices (e.g. workstations), or ***remote human users***, meaning they interact indirectly with the TOE through another IT product.

A period of interaction between users and the TSF is referred to as a user ***session***. Establishment of user sessions can be controlled based on a variety of considerations, for example: user authentication, time of day, method of accessing the TOE, and number of allowed concurrent sessions per user.

Part 2 uses the term ***authorised*** to signify a user who possesses the rights and/or privileges necessary to perform an operation. The term ***authorised user***, therefore, indicates that it is allowable for a user to perform an operation as defined by the TSP.

To express requirements that call for the separation of administrator duties, the relevant Part 2 security functional components (from family FMT_SMF) explicitly state that administrative ***roles*** are required. A role is a pre-defined set of allowed authorisations that may be granted to a user. A TOE may support the definition of any number of roles. For example, roles related to the secure operation of a TOE may include “Audit Administrator” and “User Accounts Administrator”.

TOEs contain resources that may be used for the processing and storing of information. The primary goal of the TSF is the complete and correct enforcement of the TSP over the resources and information that the TOE controls.

TOE resources can be structured and utilised in many different ways. However, Part 2 makes a specific distinction that allows for the specification of desired security properties. All entities that can be created from resources can be characterised in one of two ways. The entities may be active, meaning that they are the cause of actions that occur internal to the TOE and cause operations to be performed on information. Alternatively, the entities may be passive, meaning that they are either the container from which information originates or to which information is stored.

Active entities are referred to as ***subjects***. Several types of subjects may exist within a TOE:

a) those acting on behalf of an authorised user and which are subject to all the rules of the TSP (e.g. UNIX processes);

b) those acting as a specific functional process that may in turn act on behalf of multiple users (e.g. functions as might be found in client/server architectures); or

c) those acting as part of the TOE itself (e.g. trusted processes).

Part 2 addresses the enforcement of the TSP over types of subjects as those listed above.

Passive entities (i.e. information containers) are referred to in the Part 2 security functional requirements as ***objects***. Objects are the targets of operations that may be performed by subjects. In the case where a subject (an active entity) is the target of an operation (e.g. interprocess communication), a subject may also be acted on as an object.

Objects can contain ***information***. This concept is required to specify information flow control policies as addressed in the FDP class.

Users, subjects, information and objects possess certain ***attributes*** that contain information that allows the TOE to behave correctly. Some attributes, such as file names, may be intended to be informational (i.e. to increase the user-friendliness of the TOE) while others, such as access control information, may exist specifically for the enforcement of the TSP. These latter attributes are generally referred to as ***'security attributes'***. The word attribute will be used as a shorthand in this part for the word 'security attribute', unless otherwise indicated. However, no matter what the intended purpose of the attribute information, it may be necessary to have controls on attributes as dictated by the TSP.

Data in a TOE is categorised as either user data or TSF data. Figure 1.3 depicts this relationship. ***User Data*** is information stored in TOE resources that can be operated upon by users in accordance with the TSP and upon which the TSF places no special meaning. For example, the contents of an electronic mail message is user data. ***TSF Data*** is information used by the TSF in making TSP decisions. TSF Data may be influenced by users if allowed by the TSP. Security attributes, authentication data and access control list entries are examples of TSF data.

There are several SFPs that apply to data protection such as ***access control SFPs*** and ***information flow SFPs***. The mechanisms that implement access control SFPs base their policy decisions on attributes of the subjects, objects and operations within the scope of control. These attributes are used in the set of rules that govern operations that subjects may perform on objects.

The mechanisms that implement information flow SFPs base their policy decisions on the attributes of the subjects and information within the scope of control and the set of rules that govern the operations by subjects on information. The attributes of the information, which may be associated with the attributes of the container (or may not, as in the case of a multi-level database) stay with the information as it moves.

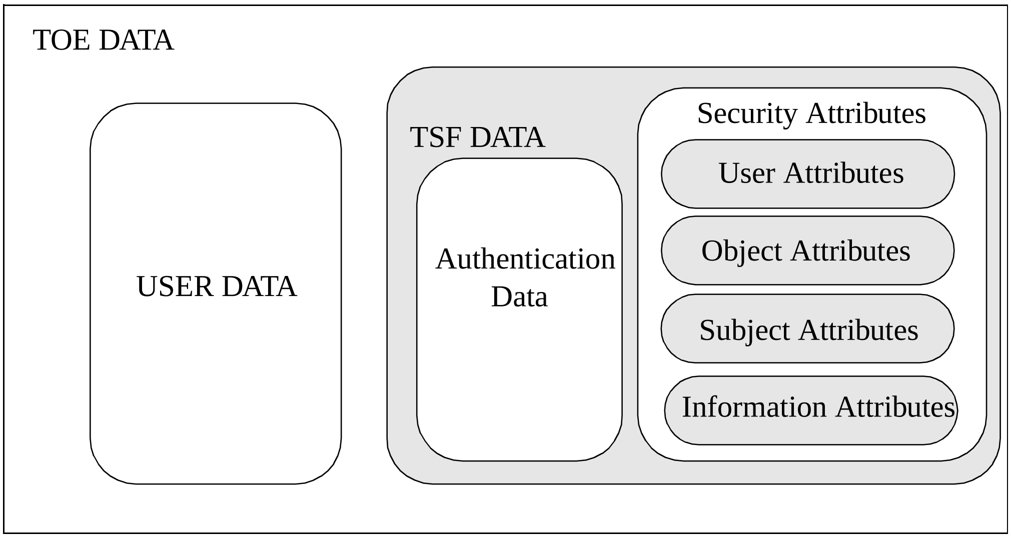

Figure 1.3 - Relationship between user data and TSF data

Two specific types of TSF data addressed by Part 2 can be, but are not necessarily, the same. These are ***authentication data*** and ***secrets***.

Authentication data is used to verify the claimed identity of a user requesting services from a TOE. The most common form of authentication data is the password, which depends on being kept secret in order to be an effective security mechanism. However, not all forms of authentication data need to be kept secret. Biometric authentication devices (e.g. fingerprint readers, retinal scanners) do not rely on the fact that the data is kept secret, but rather that the data is something that only one user possesses and that cannot be forged.

The term secrets, as used in CC functional requirements, while applicable to authentication data, is intended to also be applicable to other types of data that must be kept secret in order to enforce a specific SFP. For example, a trusted channel mechanism that relies on cryptography to preserve the confidentiality of information being transmitted via the channel can only be as strong as the method used to keep the cryptographic keys secret from unauthorised disclosure.

Therefore, some, but not all, authentication data needs to be kept secret and some, but not all, secrets are used as authentication data. Figure 1.4 shows this relationship between secrets and authentication data. In the Figure the types of data typically encountered in the authentication data and the secrets sections are indicated.

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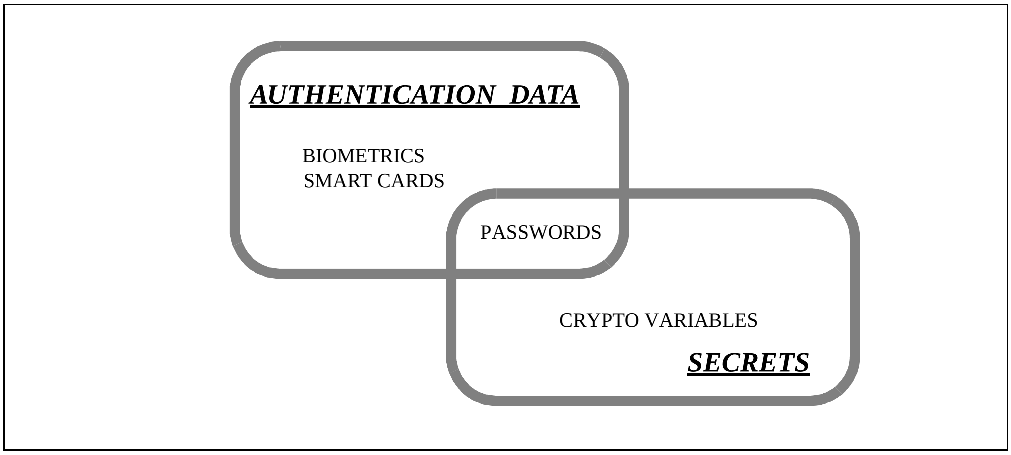


Figure 1.4 - Relationship between "authentication data" and "secrets"

2 Security functional components

2.1 Overview

This section defines the content and presentation of the functional requirements of the CC, and provides guidance on the organisation of the requirements for new components to be included in an ST. The functional requirements are expressed in classes, families, and components.

2.1.1 Class structure

Figure 2.1 illustrates the functional class structure in diagrammatic form. Each functional class includes a class name, class introduction, and one or more functional families.

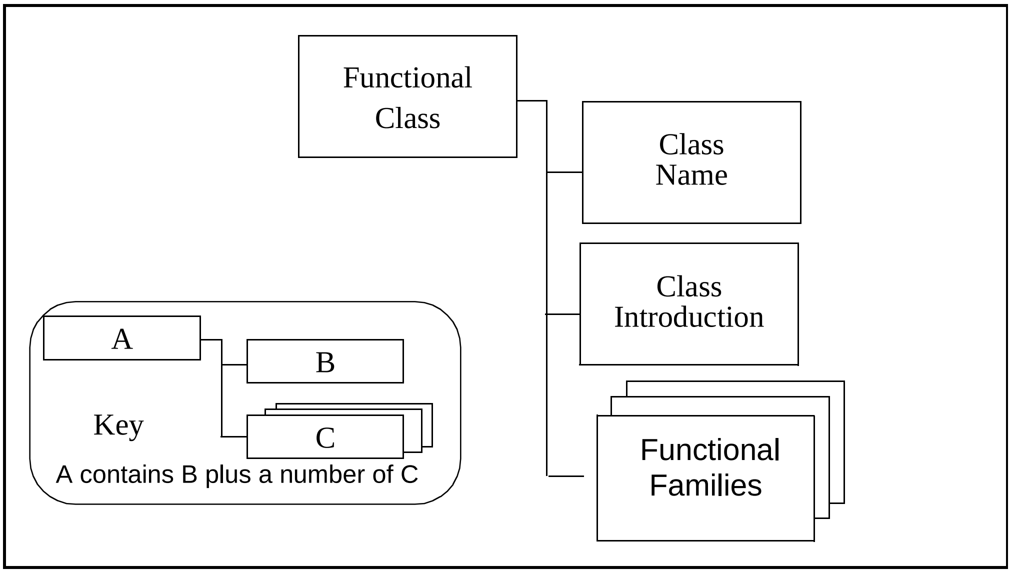


Figure 2.1 - Functional class structure

2.1.1.1 Class name

The class name section provides information necessary to identify and categorise a functional class. Every functional class has a unique name. The categorical information consists of a short name of three characters. The short name of the class is used in the specification of the short names of the families of that class.

2.1.1.2 Class introduction

The class introduction expresses the common intent or approach of those families to satisfy security objectives. The definition of functional classes does not reflect any formal taxonomy in the specification of the requirements.

The class introduction provides a figure describing the families in this class and the hierarchy of the components in each family, as explained in section 2.2.

2.1.2 Family structure

Figure 2.2 illustrates the functional family structure in diagrammatic form.

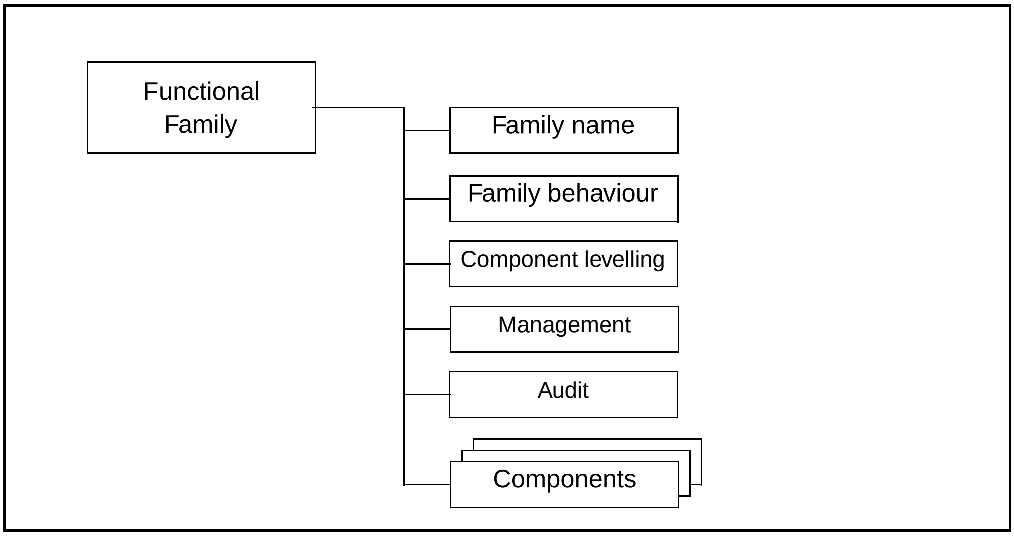


Figure 2.2 - Functional family structure

2.1.2.1 Family name

The family name section provides categorical and descriptive information necessary to identify and categorise a functional family. Every functional family has a unique name. The categorical information consists of a short name of seven characters, with the first three identical to the short name of the class followed by an underscore and the short name of the family as follows XXX_YYY. The unique short form of the family name provides the principal reference name for the components.

2.1.2.2 Family behaviour

The family behaviour is the narrative description of the functional family stating its security objective and a general description of the functional requirements. These are described in greater detail below:

a) The *security objectives* of the family address a security problem that may be solved with the help of a TOE that incorporates a component of this family;

b) The description of the *functional requirements* summarises all the requirements that are included in the component(s). The description is aimed at authors of PPs, STs and functional packages who wish to assess whether the family is relevant to their specific requirements.

2.1.2.3 Component levelling

Functional families contain one or more components, any one of which can be selected for inclusion in PPs, STs and functional packages. The goal of this section is to provide information to users in selecting an appropriate functional component once the family has been identified as being a necessary or useful part of their security requirements.

This section of the functional family description describes the components available, and their rationale. The exact details of the components are contained within each component.

The relationships between components within a functional family may or may not be hierarchical. A component is hierarchical to another if it offers more security.

As explained in section 2.2 the descriptions of the families provide a graphical overview of the hierarchy of the components in a family.

2.1.2.4 Management

The *management* requirements contain information for the PP/ST authors to consider as management activities for a given component. The management requirements are detailed in components of the management class (FMT).

A PP/ST author may select the indicated management requirements or may include other management requirements not listed. As such the information should be considered informative.

2.1.2.5 Audit

The *audit* requirements contain auditable events for the PP/ST authors to select, if requirements from the class FAU: “Security Audit” are included in the PP/ST. These requirements include security relevant events in terms of the various levels of detail supported by the components of the FAU_GEN Security Audit Data Generation family. For example, an audit note might include actions that are in terms of: Minimal - successful use of the security mechanism; Basic - any use of the security mechanism as well as relevant information regarding the security attributes involved; Detailed - any configuration changes made to the mechanism, including the actual configuration values before and after the change.

It should be observed that the categorisation of auditable events is hierarchical. For example, when Basic Audit Generation is desired, all auditable events identified as being both Minimal and Basic should be included in the PP/ST through the use of the appropriate assignment operation, except when the higher level event simply provides more detail than the lower level event. When Detailed Audit Generation is desired, all identified auditable events (Minimal, Basic and Detailed) should be included in the PP/ST.

In the class FAU the rules governing the audit are explained in more detail.

2.1.3 Component structure

Figure 2.3 illustrates the functional component structure.

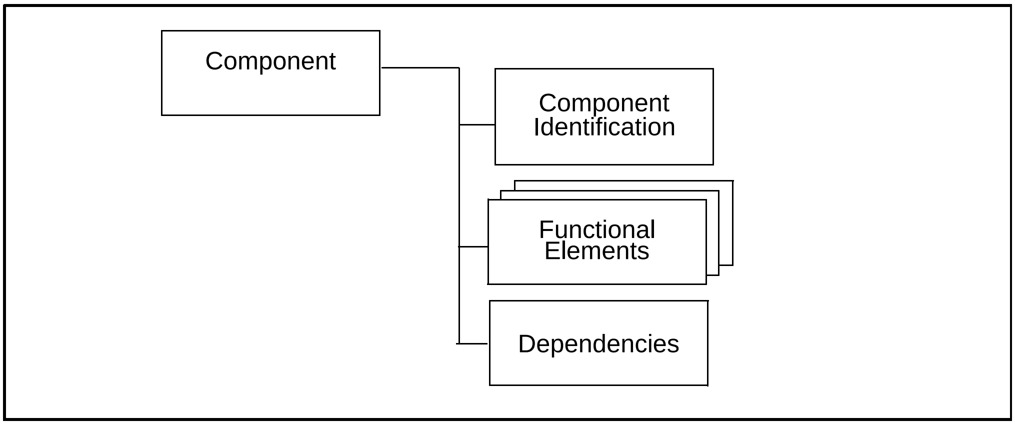


Figure 2.3 - Functional component structure

2.1.3.1 Component identification

The component identification section provides descriptive information necessary to identify, categorise, register and cross-reference a component. The following is provided as part of every functional component:

A *unique name*. The name reflects the purpose of the component.

A *short name*. A unique short form of the functional component name. This short name serves as the principal reference name for the categorisation, registration and cross-referencing of the component. This short name reflects the class and family to which the component belongs and the component number within the family.

A *hierarchical-to* list. A list of other components that this component is hierarchical to and for which this component can be used to satisfy dependencies to the listed components.

2.1.3.2 Functional elements

A set of elements is provided for each component. Each element is individually defined and is self-contained.

A functional element is a security functional requirement that if further divided would not yield a meaningful evaluation result. It is the smallest security functional requirement identified and recognised in the CC.

When building packages, PPs and/or STs, it is not permitted to select only one or more elements from a component. The complete set of elements of a component must be selected for inclusion in a PP, ST or package.

A unique short form of the functional element name is provided. For example the requirement name FDP_IFF.4.2 reads as follows: F - functional requirement, DP - class “User Data Protection”, _IFF - family “Information Flow Control Functions”, .4 - 4th component named “Partial elimination of illicit information flows”, .2 - 2nd element of the component.

2.1.3.3 Dependencies

Dependencies among functional components arise when a component is not self sufficient and relies upon the functionality of, or interaction with, another component for its own proper functioning.

Each functional component provides a complete list of dependencies to other functional and assurance components. Some components may list “No dependencies”. The components depended upon may in turn have dependencies on other components. The list provided in the components will be the direct dependencies. That is only references to the functional requirements that are required for this requirement to perform its job properly. The indirect dependencies, that is the dependencies that result from the depended upon components can be found in Part 2 Annex A. It is noted that in some cases the dependency is optional in that a number of functional requirements are provided, where each one of them would be sufficient to satisfy the dependency (see for example FDP_UIT.1).

The dependency list identifies the minimum functional or assurance components needed to satisfy the security requirements associated with an identified component. Components that are hierarchical to the identified component may also be used to satisfy the dependency.

The dependencies indicated in Part 2 are normative. They must be satisfied within a PP/ST. In specific situations the indicated dependencies might not be applicable. The PP/ST author, by providing the rationale why it is not applicable, may leave the depended upon component out of the package, PP or ST.

2.1.4 Permitted functional component operations

The functional components used in the definition of the requirements in a PP, an ST or a functional package may be exactly as specified in Chapter 2 of this Part, or they may be tailored to meet a specific security objective. However, selecting and tailoring these functional components is complicated by the fact that identified component dependencies must be considered. Thus, this tailoring is restricted to an approved set of operations.

A list of permitted operations is included with each functional component. Not all operations are permitted on all functional components.

The permitted operations are selected from the following set:

- iteration: allows a component to be used more than once with varying operations,
- assignment: allows the specification of an identified parameter,
- selection: allows the specification of one or more elements from a list,
- refinement: allows the addition of details.

2.1.4.1 Iteration

Where necessary to cover different aspects of the same requirement (e.g. identification of more than one type of user), repetitive use of the same Part 2 component to cover each aspect is permitted.

2.1.4.2 Assignment

Some functional component elements contain parameters or variables that enable the PP/ST author to specify a policy or a set of values for incorporation into the PP or ST to meet a specific security objective. These elements clearly identify each parameter and constraint on values that may be assigned to that parameter.

Any aspect of an element whose acceptable values can be unambiguously described or enumerated can be represented by a parameter. The parameter may be an attribute or rule that narrows the requirement to a specific value or range of values. For instance, based on a specified security objective, the functional component element may state that a given operation should be performed a number of times. In this case, the assignment would provide the number, or range of numbers, to be used in the parameter.

2.1.4.3 Selection

This is the operation of picking one or more items from a list in order to narrow the scope of a component element.

2.1.4.4 Refinement

For all functional component elements the PP/ST author is permitted to limit the set of acceptable implementations by specifying additional detail in order to meet a security objective. Refinement of an element consists of adding these technical details.

Within a ST, the meanings of the terms subject and object might need to be explained for the TOE to be meaningful, and are therefore subject to refinement.

Like the other operations, refinement does not levy any completely new requirements. It applies an elaboration, interpretation, or a special meaning to a requirement, rule, constant or condition based on security objectives. Refinement shall only further restrict the set of possible acceptable functions or mechanisms to implement the requirements, but never increase it. Refinement does not allow new requirements to be created, and therefore does not increase the list of dependencies associated with a component. The PP/ST author must be careful that the dependency needs of other requirements that depend on this requirement, are satisfied.

2.2 Component catalogue

The grouping of the components in this section does not reflect any formal taxonomy.

Part 2 contains classes of families and components, which are rough groupings on the basis of related function or purpose, presented in alphabetic order. At the start of each class is an informative diagram that indicates the taxonomy of each class, indicating the families in each class and the components in each family. The diagram is a useful indicator of the hierarchical relationship that may exist between components.

In the description of the functional components, a section identifies the dependencies between the component and any other components.

In each class a figure describing the family hierarchy similar to Figure 2.4, is provided. In Figure 2.4. the first family, Family 1, contains three hierarchical components, where component 2 and component 3 can both be used to satisfy dependencies on component 1. Component 3 is hierarchical to component 2 and can also be used to satisfy dependencies on component 2.

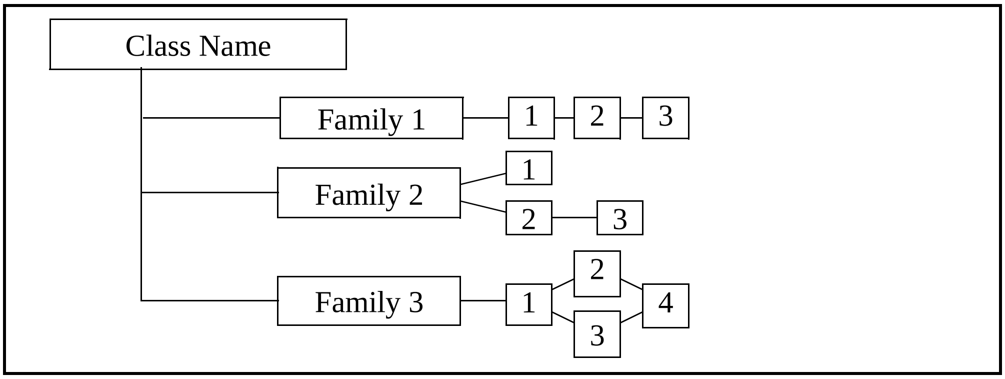


Figure 2.4 - Sample class decomposition diagram

In Family 2 there are three components not all of which are hierarchical. Components 1 and 2 are hierarchical to no other components. Component 3 is hierarchical to component 2, and can be used to satisfy dependencies on component 2, but not to satisfy dependencies on component 1.

In Family 3, components 2, 3, and 4 are hierarchical to component 1. Components 2 and 3 are both hierarchical to component 1, but non-comparable. Component 4 is hierarchical to both component 2 and component 3.

These diagrams are meant to complement the text of the families and make identification of the relationships easier. They do not replace the “Hierarchical to:” note in each component that is the mandatory claim of hierarchy for each component.

2.2.1 Component changes highlighting

The relationship between components within a family is highlighted using a **bolding** convention. This bolding convention calls for the bolding of all new requirements. For hierarchical components, requirements and/or dependencies are bolded when they are enhanced or modified beyond the requirements of the previous component. In addition, any new or enhanced threats, application notes, and/or permitted operations beyond the previous component are also highlighted using **bold** type.

3 Class FAU: Security Audit

Security auditing involves recognising, recording, storing, and analysing information related to security relevant activities (i.e. activities controlled by the TSP). The resulting audit records can be examined to determine which security relevant activities took place and whom (which user) is responsible for them.

D R A F T

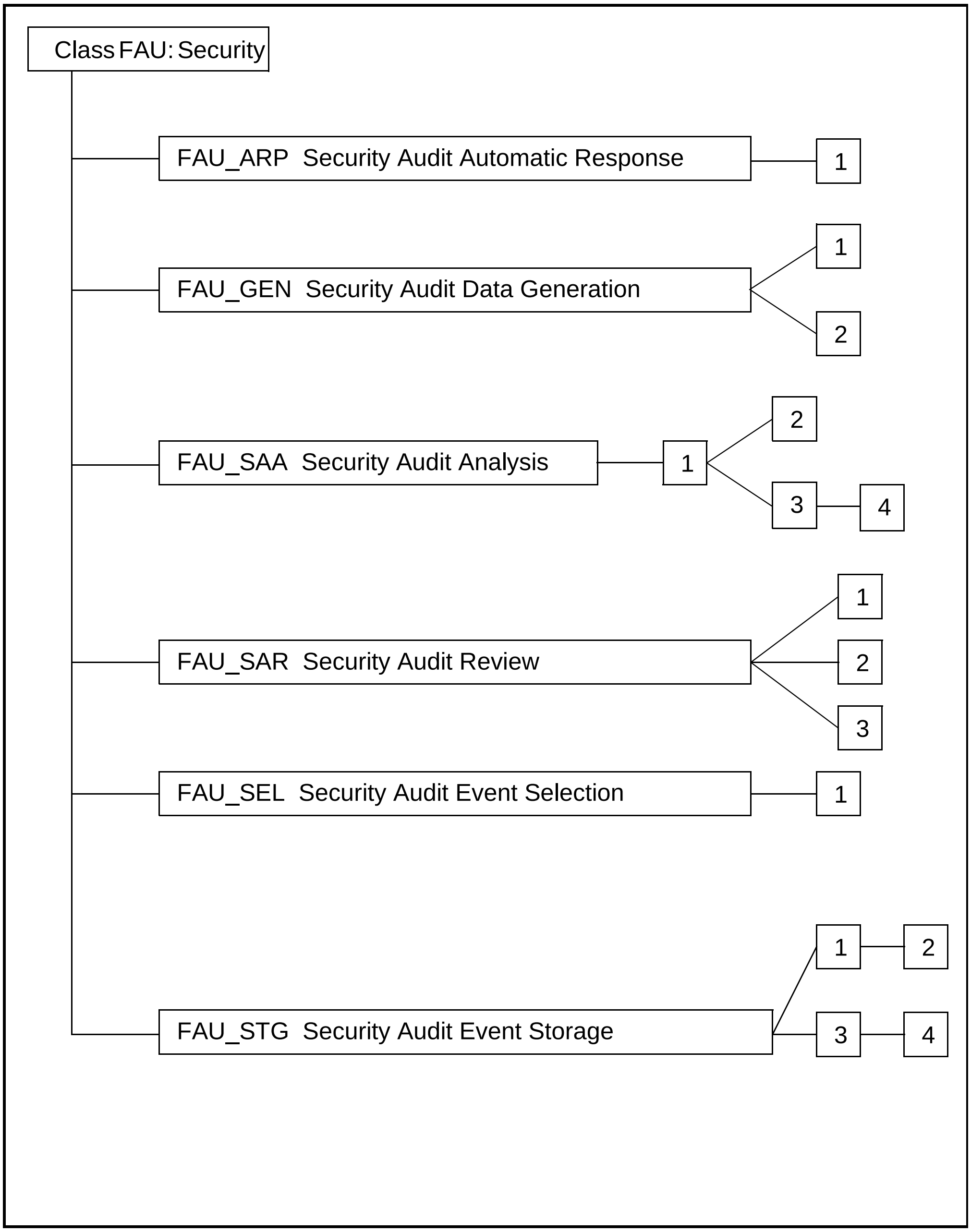

Class FAU: Security
FAU_ARP Security Audit Automatic Response
1
FAU_GEN Security Audit Data Generation
1
2
FAU_SAA Security Audit Analysis
1
2
3
4
FAU_SAR Security Audit Review
1
2
3
FAU_SEL Security Audit Event Selection
1
FAU_STG Security Audit Event Storage
1
2
3
4

Figure 3.1 - Security Audit Class decomposition

3.1 Security Audit Automatic Response (FAU_ARP)

Family behaviour

This family defines the response to be taken in case of detected events indicative of a potential security violation.

Component levelling

FAU_ARP Security Audit Automatic Response
1

At FAU_ARP.1 Security Alarms, the TSF shall take actions in case a potential security violation is detected.

Management: FAU_ARP.1

The following actions could be considered for the management functions in FMT:

a) the management (addition, removal, or modification) of actions.

Audit: FAU_ARP.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Actions taken due to imminent security violations.

FAU_ARP.1 Security Alarms

Hierarchical to: no other components.

FAU_ARP.1.1 **The TSF shall take [assignment: *list of the least disruptive actions*] upon detection of a potential security violation.**

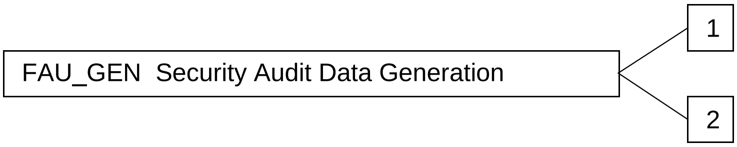
Dependencies :**FAU_SAA.1 Potential Violation Analysis**

3.2 Security Audit Data Generation (FAU_GEN)

Family behaviour

This family defines requirements for recording the occurrence of security relevant events that take place under TSF control. This family identifies the level of auditing, enumerates the types of events that shall be auditable by the TSF, and identifies the minimum set of audit-related information that should be provided within various audit record types.

Component levelling



FAU_GEN.1 Audit Data Generation defines the level of auditable events, and specifies the list of data that shall be recorded in each record.

At FAU_GEN.2 User Identity Generation, the TSF shall associate auditable events to individual user identities.

Management: FAU_GEN.1, FAU_GEN.2

There are no management activities foreseen.

Audit: FAU_GEN.1, FAU_GEN.2

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FAU_GEN.1 Audit Data Generation

Hierarchical to: no other components.

FAU_GEN.1.1 **The TSF shall be able to generate an audit record of the following auditable events:**

a) Start-up and shutdown of the audit functions;

b) All auditable events for the [selection: *minimum, basic, detailed, not specified*] level of audit; and

c) [assignment: *other specifically defined auditable events*].

FAU_GEN.1.2 **The TSF shall record within each audit record at least the following information:**

a) **Date and time of the event, type of event, subject identity, and the outcome (success or failure) of the event; and**

b) **For each audit event type, based on the auditable event definitions of the functional components included in the PP/ST, [assignment: *other audit relevant information*]**

Dependencies :**FPT_STM.1 Reliable Time Stamps**

FAU_GEN.2 User Identity Generation

Hierarchical to: no other components.

FAU_GEN.2.1 **The TSF shall be able to associate each auditable event with the identity of the user that caused the event.**

Dependencies :**FAU_GEN.1 Audit Data Generation**
FIA_UID.1 Timing of Identification

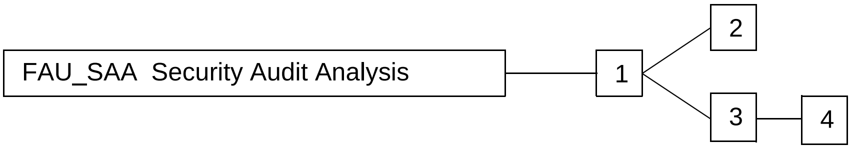
3.3 Security Audit Analysis (FAU_SAA)

Family behaviour

This family defines requirements for automated means that analyse system activity and audit data looking for possible or real security violations. This analysis may work in support of intrusion detection, or automatic response to an imminent security violation.

The actions to be taken based on the detection can be specified using the FAU_ARP family as desired.

Component levelling



In **FAU_SAA.1 Potential Violation Analysis**, basic threshold detection on the basis of a fixed rule set is required.

In FAU_SAA.2 Profile Based Anomaly Detection, the TSF maintains individual *profiles* of system usage, where a profile represents the historical patterns of usage performed by members of the *profile target group.* A profile target group refers to a group of one or more individuals (e.g. a single user, users who share a group ID or group account, users who operate under an assigned role, users of an entire system or network node) who interact with the TSF. Each member of a profile target group is assigned an individual *suspicion rating* that represents how well that member's current activity corresponds to the established patterns of usage represented in the profile. This analysis can be performed at runtime or during a post-collection batch-mode analysis.

In FAU_SAA.3 Simple Attack Heuristics, the TSF shall be able to detect the occurrence of signature events that represent a significant threat to TSP enforcement. This search for signature events may occur in real-time or during a post-collection batch-mode analysis.

In FAU_SAA.4 Complex Attack Heuristics, the TSF shall be able to represent and detect multi-step intrusion scenarios. The TSF is able to compare system events (possibly performed by multiple individuals) against event sequences known to represent entire intrusion scenarios. The TSF shall be able to indicate when a signature event or event sequence is found that indicates a potential violation of the TSP.

Management: FAU_SAA.1

The following actions could be considered for the management functions in FMT:

a) maintenance of the rules by (adding, modifying, deletion) of rules from the set of rules.

Management: FAU_SAA.2

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of the group of users in the profile target group.

Management: FAU_SAA.3

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of the subset of system events.

Management: FAU_SAA.4

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of the subset of system events;

b) maintenance (deletion, modification, addition) of the set of sequence of system events.

Audit: FAU_SAA.1, FAU_SAA.2, FAU_SAA.3, FAU_SAA.4

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Enabling and disabling of any of the analysis mechanisms;

b) Minimal: Automated responses performed by the tool.

FAU_SAA.1 Potential Violation Analysis

Hierarchical to: no other components.

FAU_SAA.1.1 **The TSF shall be able to apply a set of rules in monitoring the audited events and based upon these rules indicate a potential violation of the TSP.**

FAU_SAA.1.2 **The TSF shall enforce the following rules for monitoring audited events:**

a) Accumulation or combination of [assignment: *subset of defined auditable events*] known to indicate a potential security violation;

b) [assignment: *any other rules*].

Dependencies :**FAU_GEN.1 Audit Data Generation**

FAU_SAA.2 Profile Based Anomaly Detection

Hierarchical to: FAU_SAA.1

FAU_SAA.2.1 **The TSF shall be able to maintain profiles of system usage, where an individual profile represents the historical patterns of usage performed by the member(s) of [assignment: *specify the profile target group*].**

FAU_SAA.2.2 **The TSF shall be able to maintain a suspicion rating associated with each user whose activity is recorded in a profile, where the suspicion rating represents the degree to which the user's current activity is found inconsistent with the established patterns of usage represented in the profile.**

FAU_SAA.2.3 **The TSF shall be able to indicate an imminent violation of the TSP when a user's suspicion rating exceeds the following threshold conditions [assignment: *conditions under which anomalous activity is reported by the TSF*].**

Dependencies :**FIA_UID.1 Timing of Identification**

FAU_SAA.3 Simple Attack Heuristics

Hierarchical to: FAU_SAA.1

FAU_SAA.3.1 **The TSF shall be able to maintain an internal representation of the following signature events [assignment: *a subset of system events*] that may indicate a violation of the TSP.**

FAU_SAA.3.2 **The TSF shall be able to compare the signature events against the record of system activity discernible from an examination of [assignment: *specify the information to be used to determine system activity*].**

FAU_SAA.3.3 **The TSF shall be able to indicate an imminent violation of the TSP when a system event is found to match a signature event that indicates a potential violation of the TSP.**

Dependencies :No dependencies.

FAU_SAA.4 Complex Attack Heuristics

Hierarchical to: FAU_SAA.3

FAU_SAA.4.1 The TSF shall be able to maintain an internal representation of the **following event sequences of known intrusion scenarios [assignment: *list of sequences of system events whose occurrence are representative of known penetration scenarios*] and** the following signature events [assignment: *a subset of system events*] that may indicate a potential violation of the TSP.

FAU_SAA.4.2 The TSF shall be able to compare the signature events **and event sequences** against the record of system activity discernible from an examination of [assignment: *specify the information to be used to determine system activity*].

FAU_SAA.4.3 The TSF shall be able to indicate an imminent violation of the TSP when **system activity** is found to match a signature event **or event sequence** that indicates a potential violation of the TSP.

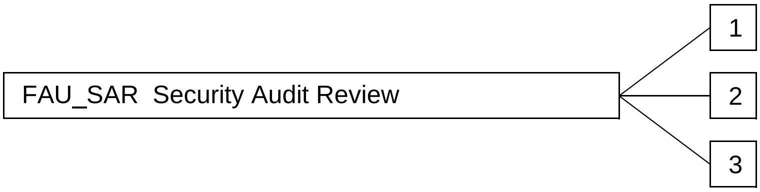
Dependencies :No dependencies.

3.4 Security Audit Review (FAU_SAR)

Family behaviour

This family defines the requirements for audit tools that should be available to authorised users to assist in the review of audit data.

Component levelling



FAU_SAR.1 Audit Review provides the capability to read information from the audit records.

FAU_SAR.2 Restricted Audit Review requires that there are no other users except those that have been identified in FAU_SAR.1 that can read the information.

FAU_SAR.3 Selectable Audit Review requires audit review tools to select the audit data to be reviewed based on criteria.

Management: FAU_SAR.1

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of the group of users with read access right to the audit records.

Management: FAU_SAR.2, FAU_SAR.3

There are no management activities foreseen.

Audit: FAU_SAR.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Reading of information from the audit records.

Audit: FAU_SAR.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Unsuccessful attempts to read information from the audit records.

Audit: FAU_SAR.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Detailed: the parameters used for the viewing.

FAU_SAR.1 Audit Review

This component will provide authorised users the capability to obtain and interpret the information. In case of human users this information needs to be in a human understandable presentation. In case of external IT entities the information needs to be unambiguously represented in an electronic fashion.

Hierarchical to: no other components.

FAU_SAR.1.1 **The TSF shall provide [assignment: *authorised users*] with the capability to read [assignment: *list of audit information*] from the audit records.**

FAU_SAR.1.2 **The TSF shall provide the audit records in a manner suitable for the user to interpret the information.**

Dependencies :**FAU_GEN.1 Audit Data Generation**

FAU_SAR.2 Restricted Audit Review

Hierarchical to: no other components.

FAU_SAR.2.1 **The TSF shall prohibit all users read access to the audit records, except those users that have been granted explicit read-access.**

Dependencies :**FAU_SAR.1 Audit Review**

FAU_SAR.3 Selectable Audit Review

Hierarchical to: no other components.

FAU_SAR.3.1 **The TSF shall provide the ability to perform [selection: *searches, sorting, ordering*] of audit data based on [assignment: *criteria with logical relations*].**

Dependencies :**FAU_SAR.1 Audit Review**

3.5 Security Audit Event Selection (FAU_SEL)

Family behaviour

This family defines requirements to select the events to be audited during TOE operation. It defines requirements to include or exclude events from the set of auditable events.

FAU_SEL.1 Selective Audit, requires the ability to include or exclude events from the set of audited events based upon attributes to be specified by the PP/ST author.

Management: FAU_SEL.1

The following actions could be considered for the management functions in FMT:

a) maintenance of the rights to view/modify the audit events.

Audit: FAU_SEL.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: All modifications to the audit configuration that occur while the audit collection functions are operating.

FAU_SEL.1 Selective Audit

Hierarchical to: no other components.

FAU_SEL.1.1 **The TSF shall be able to include or exclude auditable events from the set of audited events based on the following attributes:**

a) [selection: *object identity, user identity, subject identity, host identity, event type*]

b) [assignment: *list of additional attributes that audit selectivity is based upon*].

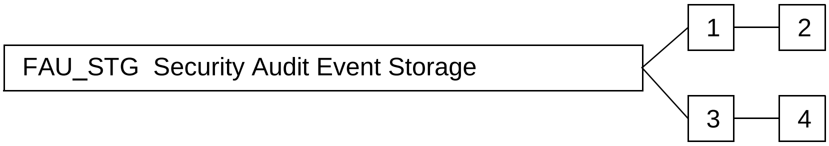
Dependencies :**FAU_GEN.1 Audit Data Generation**
FMT_MTD.1 Management of TSF Data

3.6 Security Audit Event Storage (FAU_STG)

Family behaviour

This family defines the requirements for the TSF to be able to create and maintain a secure audit trail.

Component levelling



At FAU_STG.1 Protected Audit Trail Storage, requirements are placed on the audit trail. It will be protected from unauthorised deletion and/or modification.

FAU_STG.2 Guarantees of Audit Data Availability specifies the guarantees that the TSF maintains over the audit data given the occurrence of an undesired condition.

FAU_STG.3 Action in Case of Possible Audit Data Loss specifies actions to be taken if a threshold on the audit trail is exceeded.

FAU_STG.4 Prevention of Audit Data Loss specifies actions in case the audit trail is full.

Management: FAU_STG.1

There are no management activities foreseen.

Management: FAU_STG.2

The following actions could be considered for the management functions in FMT:

a) maintenance of the parameters that control the audit storage capability.

Management: FAU_STG.3

The following actions could be considered for the management functions in FMT:

a) maintenance of the threshold;

b) maintenance (deletion, modification, addition) of actions to be taken in case of imminent audit storage failure.

Management: FAU_STG.4

The following actions could be considered for the management functions in FMT:

a) maintenance (deletion, modification, addition) of actions to be taken in case of audit storage failure.

Audit: FAU_STG.1, FAU_STG.2

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

Audit: FAU_STG.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Actions taken due to exceeding of a threshold.

Audit: FAU_STG.4

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Actions taken due to the audit storage failure.

FAU_STG.1 Protected Audit Trail Storage

Hierarchical to: no other components.

FAU_STG.1.1 **The TSF shall protect the stored audit records from unauthorised deletion.**

FAU_STG.1.2 **The TSF shall be able to [selection: *prevent, detect*] modifications to the audit records.**

Dependencies :**FAU_GEN.1 Audit Data Generation**

FAU_STG.2 Guarantees of Audit Data Availability

Hierarchical to: FAU_STG.1

FAU_STG.2.1 The TSF shall protect the stored audit records from unauthorised deletion.

FAU_STG.2.2 The TSF shall be able to [selection: *prevent*, *detect*] modifications to the audit records.

FAU_STG.2.3 **The TSF shall ensure that [assignment: *metric for saving audit records*] audit records will be maintained when the following conditions occur: [selection: *audit storage exhaustion, failure, attack*].**

Dependencies :FAU_GEN.1 Audit Data Generation

FAU_STG.3 Action in Case of Possible Audit Data Loss

Hierarchical to: no other components.

FAU_STG.3.1 **The TSF shall take [assignment: *actions to be taken in case of possible audit storage failure*] if the audit trail exceeds [assignment: *pre-defined limit*].**

Dependencies :**FAU_STG.1 Protected Audit Trail Storage**

FAU_STG.4 Prevention of Audit Data Loss

Hierarchical to: FAU_STG.3 Action in Case of Possible Audit Data Loss

FAU_STG.4.1 **The TSF shall [selection: *'ignore auditable events', 'prevent auditable events, except those taken by the authorised user with special rights', 'overwrite the oldest stored audit records'*] and [assignment: *other actions to be taken in case of audit storage failure*] if the audit trail is full.**

Dependencies :**FAU_GEN.1 Audit Data Generation**

4 Class FCO: Communication

This class provides two families specifically concerned with assuring the identity of a party participating in a data exchange. These families are related to assuring the identity of the originator of transmitted information (proof of origin) and assuring the identity of the recipient of transmitted information (proof of receipt). These families ensure that an originator cannot deny having sent the message, nor can the recipient deny having received it.

Figure 4.1 shows the decomposition of this class into its constituent components.

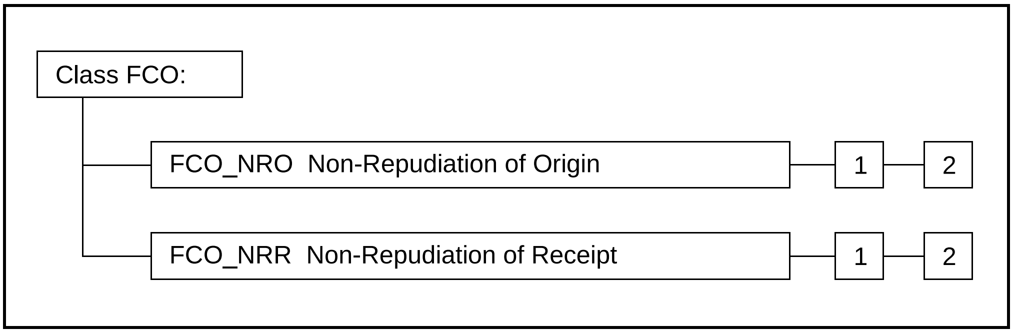

Class FCO:
FCO_NRO Non-Repudiation of Origin
1
2
FCO_NRR Non-Repudiation of Receipt
1
2

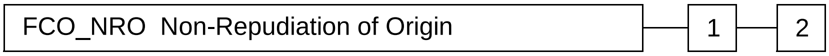
Figure 4.1 - Communication class decomposition

4.1 Non-Repudiation of Origin (FCO_NRO)

Family behaviour

Non-repudiation of origin ensures that the originator of information cannot successfully deny having sent the information. This family requires that the TSF provide a method to ensure that a subject that receives information during a data exchange is provided with evidence of the origin of the information. This evidence can then be verified by either this subject or other subjects.

Component levelling



FCO_NRO.1 Selective Proof of Origin requires the TSF to provide subjects with the capability to request evidence of the origin of information.

FCO_NRO.2 Enforced Proof of Origin requires that the TSF always generate evidence of origin for transmitted information.

Management: for FCO_NRO.1 and FCO_NRO.2

The following actions could be considered for the management functions in FMT:

a) The management of changes to information types, fields, originator attributes and recipients of evidence.

Audit: for FCO_NRO.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: The identity of the user who requested that evidence of origin would be generated.

b) Minimal: The invocation of the non-repudiation service.

c) Basic: Identification of the information, the destination, and a copy of the evidence provided.

d) Detailed: The identity of the user who requested a verification of the evidence.

Audit: for FCO_NRO.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: The invocation of the non-repudiation service.

b) Basic: Identification of the information, the destination, and a copy of the evidence provided.

c) Detailed: The identity of the user who requested a verification of the evidence.

FCO_NRO.1 Selective Proof of Origin

Hierarchical to: no other components.

FCO_NRO.1.1 **The TSF shall be able to generate evidence of origin for transmitted [assignment: *list of information types*] at the request of the [selection: *originator, recipient,* [assignment: *list of third parties*]].**

FCO_NRO.1.2 **The TSF shall be able to relate the [assignment: *list of attributes*] of the originator of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.**

FCO_NRO.1.3 **The TSF shall provide a capability to verify the evidence of origin of information to [selection: *originator, recipient,* [assignment: *list of third parties*]] given [assignment: *limitations on the evidence of origin*].**

Dependencies :**FIA_UID.1 Timing of Identification**

FCO_NRO.2 Enforced Proof of Origin

Hierarchical to: FCO_NRO.1

FCO_NRO.2.1 The TSF shall **enforce the generation of** evidence of origin for transmitted [assignment: *list of information types*] at all times.

FCO_NRO.2.2 The TSF shall be able to relate the [assignment: *list of attributes*] of the originator of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

FCO_NRO.2.3 The TSF shall provide a capability to verify the evidence of origin of information to [selection: *originator, recipient,* [assignment: *list of third parties*]] given [assignment: *limitations on the evidence of origin*].

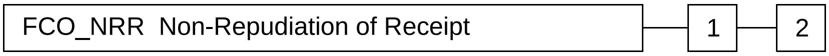
Dependencies :**FIA_UID.1 Timing of Identification**

4.2 Non-Repudiation of Receipt (FCO_NRR)

Family behaviour

Non-repudiation of receipt ensures that the recipient of information cannot successfully deny receiving the information. This family requires that the TSF provide a method to ensure that a subject that transmits information during a data exchange is provided with evidence of receipt of the information. This evidence can then be verified by either this subject or other subjects.

Component levelling



FCO_NRR.1 Selective Proof of Receipt requires the TSF to provide subjects with a capability to request evidence of the receipt of information.

FCO_NRR.2 Enforced Proof of Receipt requires that the TSF always generate evidence of receipt for received information.

Management: for FCO_NRR.1 and FCO_NRR.2

The following actions could be considered for the management functions in FMT:

a) The management of changes to information types, fields, originator attributes and third parties recipients of evidence.

Audit: for FCO_NRR.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: The identity of the user who requested that evidence of receipt would be generated.

b) Minimal: The invocation of the non-repudiation service.

c) Basic: Identification of the information, the destination, and a copy of the evidence provided.

d) Detailed: The identity of the user who requested a verification of the evidence.

Audit: for FCO_NRR.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: The invocation of the non-repudiation service.

b) Basic: Identification of the information, the destination, and a copy of the evidence provided.

c) Detailed: The identity of the user who requested a verification of the evidence.

FCO_NRR.1 Selective Proof of Receipt

Hierarchical to: no other components.

FCO_NRR.1.1 **The TSF shall be able to generate evidence of receipt for received [assignment: *list of information types*] at the request of the [selection: *originator, recipient,* [assignment: *list of third parties*]].**

FCO_NRR.1.2 **The TSF shall be able to relate the [assignment: *list of attributes*] of the recipient of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.**

FCO_NRR.1.3 **The TSF shall provide a capability to verify the evidence of receipt of information to [selection: *originator, recipient,* [assignment: *list of third parties*]] given [assignment: *limitations on the evidence of receipt*].**

Dependencies :**FIA_UID.1 Timing of Identification**

FCO_NRR.2 Enforced Proof of Receipt

Hierarchical to: FCO_NRR.1

FCO_NRR.2.1 The TSF shall **enforce the generation of** evidence of receipt for received [assignment: *list of information types*].

FCO_NRR.2.2 The TSF shall be able to relate the [assignment: *list of attributes*] of the recipient of the information, and the [assignment: *list of information fields*] of the information to which the evidence applies.

FCO_NRR.2.3 The TSF shall provide a capability to verify the evidence of receipt of information to [selection: *originator*, *recipient*, [assignment: *list of third parties*]] given [assignment: *limitations on the evidence of receipt*].

Dependencies :**FIA_UID.1 Timing of Identification**

5 Class FCS: Cryptographic Support

The TSF may employ cryptographic functionality to help satisfy several high-level security objectives. These include (but are not limited to): identification and authentication, non-repudiation, trusted path, trusted channel and data separation. This class is used when the TOE implements cryptographic functions, the implementation of which could be in hardware, firmware and/or software.

The FCS class is composed of two families: FCS_CKM Cryptographic Key Management and FCS_COP Cryptographic Operation. The FCS_CKM family addresses the management aspects of cryptographic keys, while the FCS_COP family is concerned with the operational use of those cryptographic keys.

Figure 5.1 shows the decomposition of this class into its constituent components.

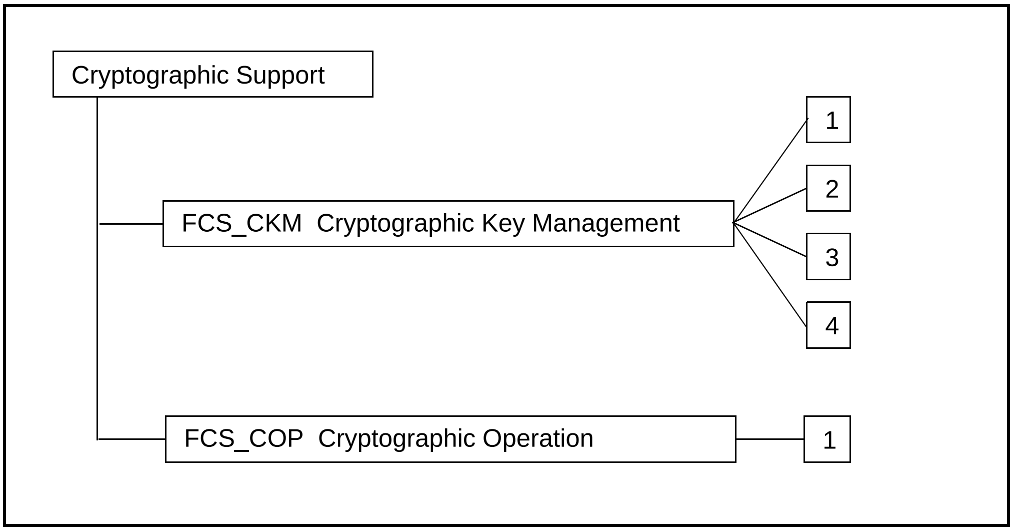

Cryptographic Support
FCS_CKM Cryptographic Key Management
1
2
3
4
FCS_COP Cryptographic Operation
1

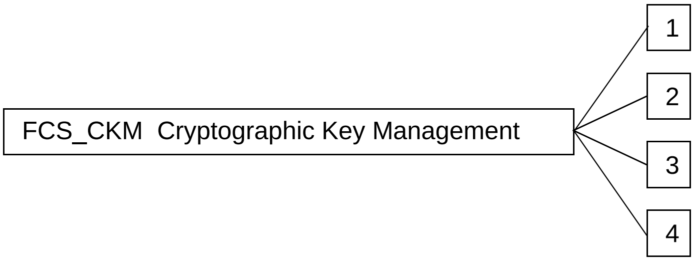
Figure 5.1 - Cryptographic Support class decomposition

5.1 Cryptographic Key Management (FCS_CKM)

Family behaviour

Cryptographic keys must be managed throughout their life cycle. This family is intended to support that lifecycle and consequently defines requirements for the following activities: cryptographic key generation, cryptographic key distribution, cryptographic key access and cryptographic key destruction. This family should be included whenever there are functional requirements for the management of cryptographic keys.

Component levelling



FCS_CKM.1 Cryptographic Key Generation requires cryptographic keys to be generated in accordance with a specified algorithm and key sizes which can be based on an assigned standard.

FCS_CKM.2 Cryptographic Key Distribution requires cryptographic keys to be distributed in accordance with a specified distribution method which can be based on an assigned standard.

FCS_CKM.3 Cryptographic Key Access requires access to cryptographic keys to be performed in accordance with a specified access method which can be based on an assigned standard.

FCS_CKM.4 Cryptographic Key Destruction requires cryptographic keys to be destroyed in accordance with a specified destruction method which can be based on an assigned standard.

Management: for FCS_CKM.1, FCS_CKM.2, FCS_CKM.3 and FCS_CKM.4

The following actions could be considered for the management functions in FMT:

a) the management of changes to cryptographic key attributes. Examples of key attributes include user, key type (e.g. public, private, secret), validity period, and use (e.g. digital signature, key encryption, key agreement, data encryption).

Audit: for FCS_CKM.1, FCS_CKM.2, FCS_CKM.3 and FCS_CKM.4

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Success and failure of the activity.

b) Basic: The object attribute(s), and object value(s) excluding any sensitive information (e.g. secret or private keys).

FCS_CKM.1 Cryptographic Key Generation

Hierarchical to: no other components.

FCS_CKM.1.1 **The TSF shall generate cryptographic keys in accordance with a specified cryptographic key generation algorithm [assignment: *cryptographic key generation algorithm*] and specified cryptographic key sizes [assignment: *cryptographic key sizes*] that meet the following: [assignment: *list of standards*].**

Dependencies :**[FCS_CKM.2 Cryptographic Key Distribution**

or

FCS_COP.1 Cryptographic Operation]

FCS_CKM.4 Cryptographic Key Destruction

FMT_MSA.2 Secure Security Attributes

FCS_CKM.2 Cryptographic Key Distribution

Hierarchical to: no other components.

FCS_CKM.2.1 **The TSF shall distribute cryptographic keys in accordance with a specified cryptographic key distribution method [assignment: *cryptographic key distribution method*] that meets the following: [assignment: *list of standards*].**

Dependencies :**[FDP_ITC.1 Import of User Data Without Security Attributes**

or

FCS_CKM.1 Cryptographic Key Generation]

FCS_CKM.4 Cryptographic Key Destruction

FMT_MSA.2 Secure Security Attributes

FCS_CKM.3 Cryptographic Key Access

Hierarchical to: no other components.

FCS_CKM.3.1 **The TSF shall perform [assignment: *type of cryptographic key access*] in accordance with a specified cryptographic key access method [assignment: *cryptographic key access method*] that meets the following: [assignment: *list of standards*].**

Dependencies :**[FDP_ITC.1 Import of User Data Without Security Attributes**
or
FCS_CKM.1 Cryptographic Key Generation]
FCS_CKM.4 Cryptographic Key Destruction
FMT_MSA.2 Secure Security Attributes

FCS_CKM.4 Cryptographic Key Destruction

Hierarchical to: no other components.

FCS_CKM.4.1 The TSF shall destroy cryptographic keys in accordance with a specified cryptographic key destruction method [assignment: *cryptographic key destruction method*] that meets the following: [assignment: *list of standards*].

Dependencies :**[FDP_ITC.1 Import of User Data Without Security Attributes**
or
FCS_CKM.1 Cryptographic Key Generation]
FMT_MSA.2 Secure Security Attributes

5.2 Cryptographic Operation (FCS_COP)

Family behaviour

In order for a cryptographic operation to function correctly, the operation must be performed in accordance with a specified algorithm and with a cryptographic key of a specified size. This family should be included whenever there are requirements for cryptographic operations to be performed.

Typical cryptographic operations include data encryption and/or decryption, digital signature generation and/or verification, cryptographic checksum generation for integrity and/or verification of checksum, secure hash (message digest), cryptographic key encryption and/or decryption, and cryptographic key agreement.

Component levelling

FCS_COP Cryptographic Operation
1

FCS_COP.1 Cryptographic Operation requires a cryptographic operation to be performed in accordance with a specified algorithm and with a cryptographic key of specified sizes. The specified algorithm and cryptographic key sizes can be based on an assigned standard.

Management: for FCS_COP.1

There are no management activities foreseen for these components.

Audit: for FCS_COP.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Success and failure, and the type of cryptographic operation.

b) Basic: Any applicable cryptographic mode(s) of operation, subject attributes and object attributes.

FCS_COP.1 Cryptographic Operation

Hierarchical to: no other components.

FCS_COP.1.1 **The TSF shall perform [assignment: *list of cryptographic operations*] in accordance with a specified cryptographic algorithm [assignment: *cryptographic algorithm*] and cryptographic key sizes [assignment: *cryptographic key sizes*] that meet the following: [assignment: *list of standards*].**

Dependencies :**[FDP_ITC.1 Import of User Data Without Security Attributes**

or

FCS_CKM.1 Cryptographic Key Generation]

FCS_CKM.4 Cryptographic Key Destruction

FMT_MSA.2 Secure Security Attributes

6 Class FDP: User Data Protection

This class contains families specifying requirements for TOE security functions and TOE security function policies related to protecting user data. FDP is split into four groups of families (listed below) that address user data within a TOE, during import, export, and storage as well as security attributes directly related to user data.

The families in this class are organised into four groups:

a) User Data Protection Security Function Policies:

- FDP_ACC Access Control Policy; and
- FDP_IFC Information Flow Control Policy.

Components in these families permit the PP/ST author to name the user data protection security function policies and define the scope of control of the policy, necessary to address the security objectives. The names of these policies are meant to be used throughout the remainder of the functional components that have an operation that calls for an assignment or selection of an "access control SFP" or an "information flow control SFP". The rules that define the functionality of the named access control and information flow control SFPs will be defined in the FDP_ACF and FDP_IFF families (respectively).

b) Forms of User Data Protection:

- FDP_ACF Access Control Functions;
- FDP_IFF Information Flow Control Functions;
- FDP_ITT Internal TOE Transfer;
- FDP_RIP Residual Information Protection;
- FDP_ROL Rollback; and
- FDP_SDI Stored Data Integrity.

c) Off-line Storage, Import and Export:

- FDP_DAU Data Authentication;
- FDP_ETC Export to Outside TSF Control; and
- FDP_ITC Import from Outside TSF Control.

Components in these families address the trustworthy transfer into or out of the TSC.

d) Inter-TSF Communication:

- FDP_UCT Inter-TSF User Data Confidentiality Transfer Protection; and
- FDP_UIT Inter-TSF User Data Integrity Transfer Protection.

Components in these families address communication between the TSF of the TOE and another Trusted IT Product.

Figures 6.1 and 6.2 show the decomposition of this class into its constituent components.

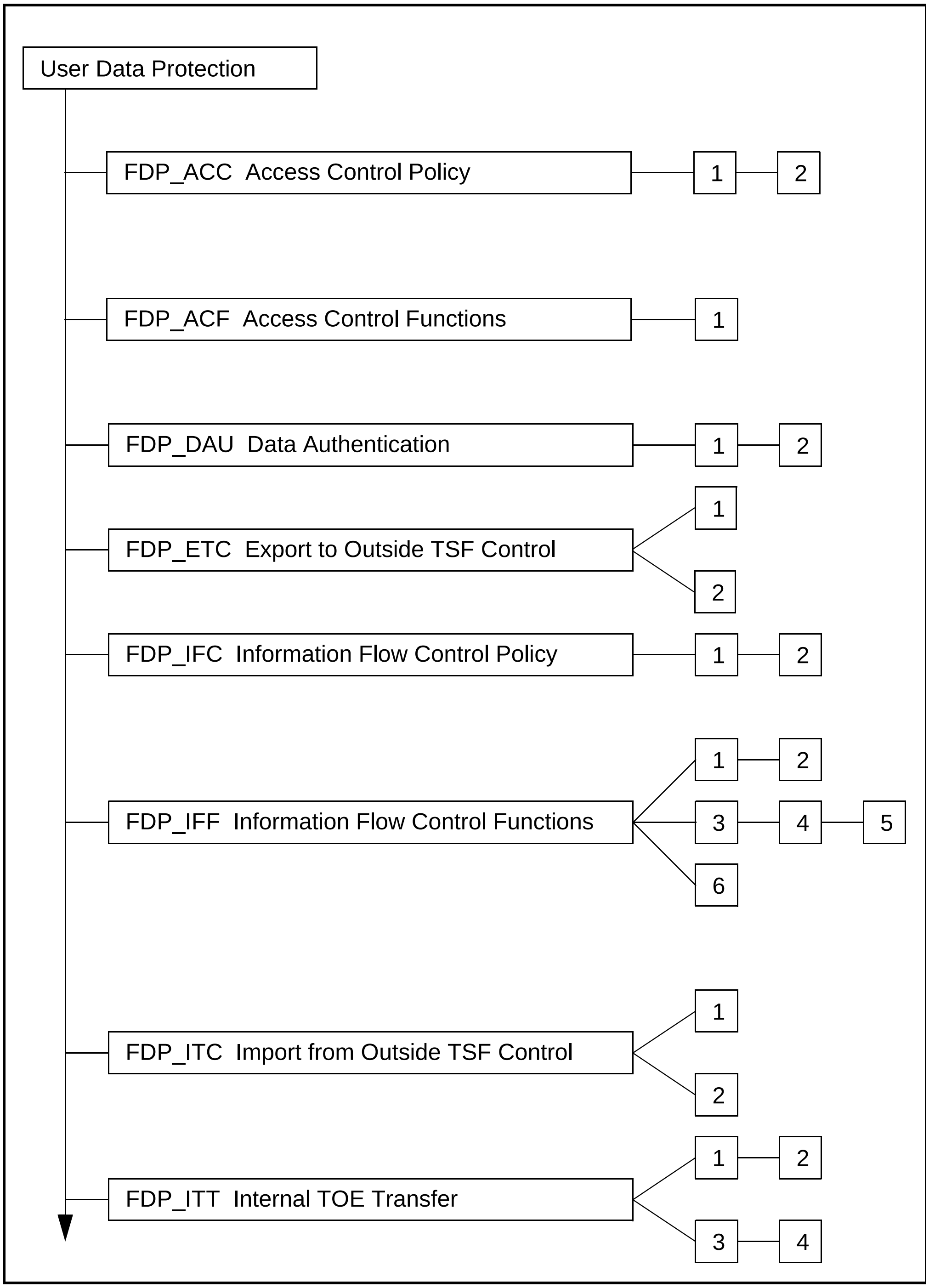

User Data Protection
FDP_ACC Access Control Policy
1
2
FDP_ACF Access Control Functions
1
FDP_DAU Data Authentication
1
2
FDP_ETC Export to Outside TSF Control
1
2
FDP_IFC Information Flow Control Policy
1
2
FDP_IFF Information Flow Control Functions
1
2
3
4
5
6
FDP_ITC Import from Outside TSF Control
1
2
FDP_ITT Internal TOE Transfer
1
2
3
4

Figure 6.1 - User Data Protection class decomposition

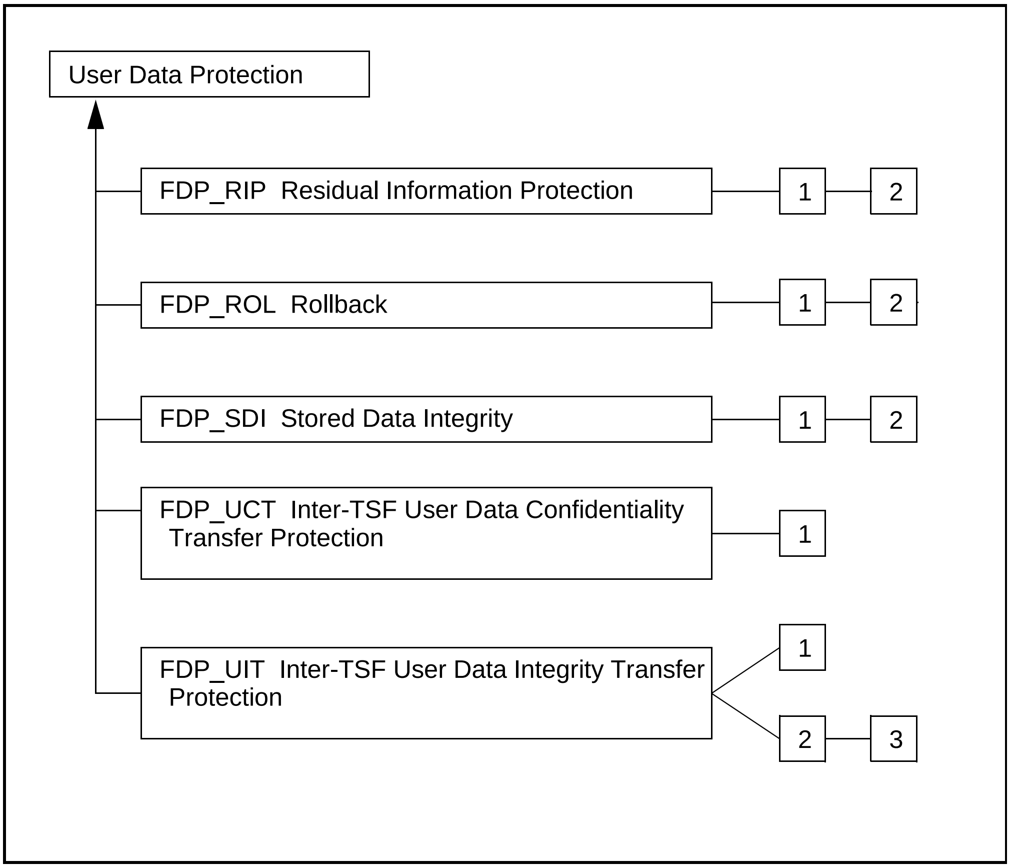

User Data Protection
FDP_RIP Residual Information Protection
1
2
FDP_ROL Rollback
1
2
FDP_SDI Stored Data Integrity
1
2
FDP_UCT Inter-TSF User Data Confidentiality Transfer Protection
1
FDP_UIT Inter-TSF User Data Integrity Transfer Protection
1
2
3

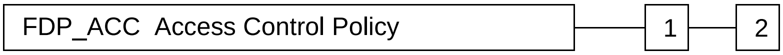
Figure 6.2 - User Data Protection class decomposition (cont.)

6.1 Access Control Policy (FDP_ACC)

Family behaviour

This family identifies the access control SFPs (by name) and defines the scope of control of the policies that form the identified access control portion of the TSP. This scope of control is characterised by three sets: the subjects under control of the policy, the objects under control of the policy, and the operations among controlled subjects and controlled objects that are covered by the policy. The criteria allows multiple policies to exist, each having a unique name. This is accomplished by iterating components from this family once for each named access control policy. The rules that define the functionality of an access control SFP will be defined by other families such as FDP_ACF and FDP_SDI. The names of the access control SFPs identified here in FDP_ACC are meant to be used throughout the remainder of the functional components that have an operation that calls for an assignment or selection of an "access control SFP."

Component levelling



FDP_ACC.1 Subset Access Control requires that each identified access control SFP be in place for a subset of the possible operations on a subset of the objects in the TOE.

FDP_ACC.2 Complete Access Control requires that each identified access control SFP cover all operations on subjects and objects covered by that SFP. It further requires that all objects and operations with the TSC are covered by at least one identified access control SFP.

Management: for FDP_ACC.1 and FDP_ACC.2

There are no management activities foreseen for this component.

Audit: for FDP_ACC.1 and FDP_ACC.2

There are no events identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FDP_ACC.1 Subset Access Control

Hierarchical to: no other components.

FDP_ACC.1.1 **The TSF shall enforce the [assignment: *access control SFP*] on [assignment: *list of subjects, objects, and operations among subjects and objects covered by the SFP*].**

Dependencies :**FDP_ACF.1 Security Attribute Based Access Control**

FDP_ACC.2 Complete Access Control

Hierarchical to: FDP_ACC.1

FDP_ACC.2.1 The TSF shall enforce the [assignment: *access control SFP*] on [assignment: *list of subjects and objects*] **and all operations among subjects and objects covered by the SFP.**

FDP_ACC.2.2 **The TSF shall ensure that all operations between any subject in the TSC and any object within the TSC are covered by an access control SFP.**

Dependencies :FDP_ACF.1 Security Attribute Based Access Control

6.2 Access Control Functions (FDP_ACF)

Family behaviour

This family describes the rules for the specific functions that can implement an access control policy named in FDP_ACC. FDP_ACC specifies the scope of control of the policy.

Component levelling

FDP_ACF Access Control Functions
1

This family addresses security attribute usage and characteristics of policies. The component within this family is meant to be used to describe the rules for the function that implements the SFP as identified in FDP_ACC. The PP/ST author may also iterate this component to address multiple policies in the TOE.

FDP_ACF.1 Security Attribute Based Access Control allows the TSF to enforce access based upon security attributes and named groups of attributes. Furthermore, the TSF may have the ability to explicitly authorise or deny access to an object based upon security attributes.

Management: for FDP_ACF.1

The following actions could be considered for the management functions in FMT Management:

a) Managing the attributes used to make explicit access or denial based decisions.

Audit: for FDP_ACF.1

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful requests to perform an operation on an object covered by the SFP.

b) Basic: All requests to perform an operation on an object covered by the SFP.

c) Detailed: The specific security attributes used in making an access check.

FDP_ACF.1 Security Attribute Based Access Control

Hierarchical to: no other components.

FDP_ACF.1.1 **The TSF shall enforce the [assignment: *access control SFP*] to objects based on [assignment: *security attributes, named groups of security attributes*].**

FDP_ACF.1.2 **The TSF shall enforce the following rules to determine if an operation among controlled subjects and controlled objects is allowed: [assignment: *rules governing access among controlled subjects and controlled objects using controlled operations on controlled objects*].**

FDP_ACF.1.3 **The TSF shall explicitly authorise access of subjects to objects based on the following additional rules: [assignment: *rules, based on security attributes, that explicitly authorise access of subjects to objects*].**

FDP_ACF.1.4 **The TSF shall explicitly deny access of subjects to objects based on the [assignment: *rules, based on security attributes, that explicitly deny access of subjects to objects*].**

Dependencies :**FDP_ACC.1 Subset Access Control**

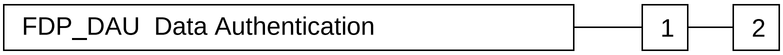
FMT_MSA.3 Static Attribute Initialisation

6.3 Data Authentication (FDP_DAU)

Family behaviour

Data authentication permits an entity to accept responsibility for the authenticity of information (e.g., by digitally signing it). This family provides a method of providing a guarantee of the validity of a specific unit of data that can be subsequently used to verify that the information content has not been forged or fraudulently modified. In contrast to Class FCO, this family is intended to be applied to "static" data rather than data that is being transferred.

Component levelling



FDP_DAU.1 Basic Data Authentication requires that the TSF is capable of generating a guarantee of authenticity of the information content of objects (e.g. documents).

FDP_DAU.2 Data Authentication with Identity of Guarantor additionally requires that the TSF is capable of establishing the identity of the subject who provided the guarantee of authenticity.

Management: for FDP_DAU.1 and FDP_DAU.2

The following actions could be considered for the management functions in FMT Management:

a) The assignment or modification of the objects for which data authentication may apply could be configurable in the system.

Audit: for FDP_DAU.1

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

a) Minimal: Successful generation of validity evidence.

b) Basic: Unsuccessful generation of validity evidence.

c) Detailed: The identity of the subject that requested the evidence.

Audit: for FDP_DAU.2

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

a) Minimal: Successful generation of validity evidence.

b) Basic: Unsuccessful generation of validity evidence.

c) Detailed: The identity of the subject that requested the evidence.

d) Detailed: The identity of the subject that generated the evidence.

FDP_DAU.1 Basic Data Authentication

Hierarchical to: no other components.

FDP_DAU.1.1 **The TSF shall provide a capability to generate evidence that can be used as a guarantee of the validity of [assignment: *list of objects or information types*]**.

FDP_DAU.1.2 **The TSF shall provide [assignment: *list of subjects*] with the ability to verify evidence of the validity of the indicated information**.

Dependencies :No dependencies.

FDP_DAU.2 Data Authentication with Identity of Guarantor

Hierarchical to: **FDP_DAU.1**

FDP_DAU.2.1 The TSF shall provide a capability to generate evidence that can be used as a guarantee of the validity of [assignment: *list of objects or information types*].

FDP_DAU.2.2 The TSF shall provide [assignment: *list of subjects*] with the ability to verify evidence of the validity of the indicated information **and the identity of the user that generated the evidence.**

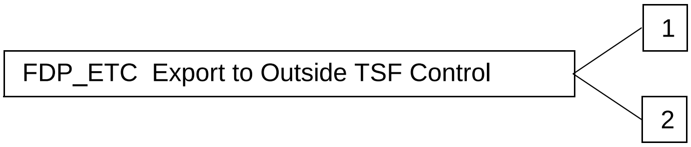
Dependencies :**FIA_UID.1 Timing of Identification**

6.4 Export to Outside TSF Control (FDP_ETC)

Family behaviour

This family defines functions for exporting user data from the TOE such that its security attributes and protection either can be explicitly preserved or can be ignored once it has been exported. It is concerned with limitations on export and with the association of security attributes with the exported user data.

Component levelling



FDP_ETC.1 Export of User Data Without Security Attributes requires that the TSF enforce the appropriate SFPs when exporting user data outside the TSF. User data that is exported by this function is exported without its associated security attributes.

FDP_ETC.2 Export of User Data With Security Attributes requires that the TSF enforce the appropriate SFPs using a function that accurately and unambiguously associates security attributes with the user data that is exported.

Management: for FDP_ETC.1

There are no management activities foreseen for this component.

Management: for FDP_ETC.2

The following actions could be considered for the management functions in FMT Management:

a) The additional exportation control rules could be configurable by a user in a defined role.

Audit: for FDP_ETC.1 and FDP_ETC.2

The following events shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful export of information.

b) Basic: All attempts to export information.

FDP_ETC.1 Export of User Data Without Security Attributes

Hierarchical to: no other components.

FDP_ETC.1.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] when exporting user data, controlled under the SFP(s), outside of the TSC.**

FDP_ETC.1.2 **The TSF shall export the user data without the user data's associated security attributes.**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**
FDP_IFC.1 Subset Information Flow Control]

FDP_ETC.2 Export of User Data With Security Attributes

Hierarchical to: no other components.

FDP_ETC.2.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] when exporting user data, controlled under the SFP(s), outside of the TSC.**

FDP_ETC.2.2 **The TSF shall export the user data with the user data's associated security attributes.**

FDP_ETC.2.3 **The TSF shall ensure that the security attributes, when exported outside the TSC, are unambiguously associated with the exported user data.**

FDP_ETC.2.4 **The TSF shall enforce the following rules when user data is exported from the TSC: [assignment: *additional exportation control rules*].**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**
FDP_IFC.1 Subset Information Flow Control]

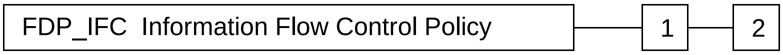
6.5 Information Flow Control Policy (FDP_IFC)

Family behaviour

This family identifies the information flow control SFPs (by name) and defines the scope of control of the policies that form the identified information flow control portion of the TSP. This scope of control is characterised by three sets: the subjects under control of the policy, the information under control of the policy, and operations which cause controlled information to flow to and from controlled subjects covered by the policy. The criteria allows multiple policies to exist, each having a unique name. This is accomplished by iterating components from this family once for each named information flow control policy. The rules that define the functionality of an information flow control SFP will be defined by other families such as FDP_IFF and FDP_SDI. The names of the information flow control SFPs identified here in FDP_IFC are meant to be used throughout the remainder of the functional components that have an operation that calls for an assignment or selection of an "information flow control SFP."

The TSF mechanism controls the flow of information in accordance with the information flow control SFP. Operations that would change the security attributes of information are not generally permitted as this would be in violation of an information flow control SFP. However, such operations may be permitted as exceptions to the information flow control SFP if explicitly specified.

Component levelling



FDP_IFC.1 Subset Information Flow Control requires that each identified information flow control SFPs be in place for a subset of the possible operations on a subset of information flows in the TOE.

FDP_IFC.2 Complete Information Flow Control requires that each identified information flow control SFP cover all operations on subjects and information covered by that SFP. It further requires that all information flows and operations with the TSC are covered by at least one identified information flow control SFP. In conjunction with the FPT_RVM.1 component, this gives the "always invoked" aspect of a reference monitor.

Management: for FDP_IFC.1 and FDP_IFC.2

There are no management activities foreseen for this component.

Audit: for FDP_IFC.1 and FDP_IFC.2

There are no events identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FDP_IFC.1 Subset Information Flow Control

Hierarchical to: no other components.

FDP_IFC.1.1 **The TSF shall enforce the [assignment: *information flow control SFP*] on [assignment: *list of subjects, information, and operations that cause controlled information to flow to and from controlled subjects covered by the SFP*].**

Dependencies : **FDP_IFF.1 Simple Security Attributes**

FDP_IFC.2 Complete Information Flow Control

Hierarchical to: FDP_IFC.1

FDP_IFC.2.1 The TSF shall enforce the [assignment: *information flow control SFP*] on [assignment: *list of subjects* and *information*] and **all operations that cause that information to flow to and from subjects covered by the SFP.**

FDP_IFC.2.2 **The TSF shall ensure that all operations that cause any information in the TSC to flow to and from any subject in the TSC are covered by an information flow control SFP.**

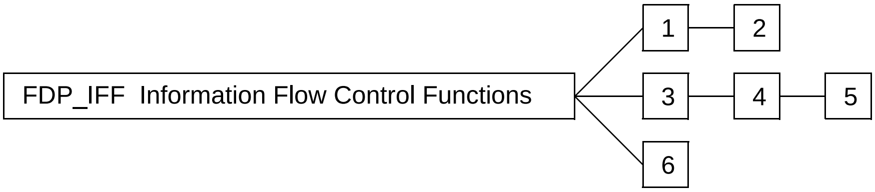
Dependencies :**FDP_IFF.1 Simple Security Attributes**

6.6 Information Flow Control Functions (FDP_IFF)

Family behaviour

This family descibes the rules for the specific functions that can implement the information flow control SFPs named in FDP_IFC, which also specifies the scope of control of the policy. It consists of two kinds of requirements: one addressing the common information flow function issues, and a second addressing illicit information flows (i.e. covert channels). This division arises because the issues concerning illicit information flows are, in some sense, orthogonal to the rest of an information flow control SFP. By their nature they circumvent the information flow control SFP resulting in a violation of the policy. As such, they require special functions to either limit or prevent their occurrence.

Component levelling



FDP_IFF.1 Simple Security Attributes requires security attributes on information, and on subjects that cause that information to flow and on subjects that act as recipients of that information. It specifies the rules that must be enforced by the function, and describes how security attributes are derived by the function.

FDP_IFF.2 Hierarchical Security Attributes expands on the requirements of **FDP_IFF.1 Simple Security Attributes** by requiring that all information flow control SFPs in the TSP use hierarchical security attributes that form a lattice.

FDP_IFF.3 Limited Illicit Information Flows requires the SFP to cover illicit information flows, but not necessarily eliminate them.

FDP_IFF.4 Partial Elimination of Illicit Information Flows requires the SFP to cover the elimination of some (but not necessarily all) illicit information flows.

FDP_IFF.5 No Illicit Information Flows requires SFP to cover the elimination of all illicit information flows.

FDP_IFF.6 Illicit Information Flow Monitoring requires the SFP to monitor illicit information flows for specified and maximum capacities.

Management: for FDP_IFF.1 and FDP_IFF.2

The following actions could be considered for the management functions in FMT Management:

a) Managing the attributes used to make explicit access based decisions.

Management: for FDP_IFF.3, FDP_IFF.4, and FDP_IFF.5

There are no management activities foreseen for these components.

Management: for FDP_IFF.6

The following actions could be considered for the management functions in FMT Management:

a) The enabling or disabling of the monitoring function.

b) Modification of the maximum capacity at which the monitoring occurs.

Audit: for FDP_IFF.1, FDP_IFF.2, and FDP_IFF.5

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in a PP/ST:

a) Minimal: Decisions to permit requested information flows.

b) Basic: All decisions on requests for information flow.

c) Detailed: The specific security attributes used in making an information flow enforcement decision.

d) Detailed: Some specific subsets of the information that has flowed based upon policy goals (e.g. auditing of downgraded material).

Audit: for FDP_IFF.3, FDP_IFF.4, and FDP_IFF.6

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in a PP/ST:

a) Minimal: Decisions to permit requested information flows.

b) Basic: All decisions on requests for information flow.

c) Basic: The use of identified illicit information flow channels.

d) Detailed: The specific security attributes used in making an information flow enforcement decision.

e) Detailed: Some specific subsets of the information that has flowed based upon policy goals (e.g. auditing of downgraded material).

f) Detailed: The use of identified illicit information flow channels with estimated maximum capacity exceeding a specified value.

FDP_IFF.1 Simple Security Attributes

Hierarchical to: no other components.

FDP_IFF.1.1 **The TSF shall enforce the [assignment: *information flow control SFP*] to enforce at least the following types of subject and information security attributes: [assignment: the *minimum number and type of security attributes*].**

FDP_IFF.1.2 **The TSF shall permit an information flow between a controlled subject and controlled information via a controlled operation if the following rules hold: [assignment: *for each operation, the security attribute-based relationship that must hold between subject and information security attributes*].**

FDP_IFF.1.3 **The TSF shall enforce the [assignment: *additional information flow control SFP rules*].**

FDP_IFF.1.4 **The TSF shall provide the following [assignment: *list of additional SFP capabilities*].**

FDP_IFF.1.5 **The TSF shall explicitly authorise an information flow based on the following rules: [assignment: *rules, based on security attributes, that explicitly authorise information flows*].**

FDP_IFF.1.6 **The TSF shall explicitly deny an information flow based on the following rules: [assignment: *rules, based on security attributes, that explicitly deny information flows*].**

Dependencies :**FDP_IFC.1 Subset Information Flow Control**

FMT_MSA.3 Static Attribute Initialisation

FDP_IFF.2 Hierarchical Security Attributes

Hierarchical to: FDP_IFF.1

FDP_IFF.2.1 The TSF shall enforce the [assignment: *information flow control SFP*] to enforce at least the following types of subject and information security attributes: [assignment: *the minimum number and type of security attributes*].

FDP_IFF.2.2 The TSF shall permit an information flow between a controlled subject and controlled information via a controlled operation if the following rules, **based on the ordering relationships between security attributes** hold: [assignment: *for each operation, the security attribute-based relationship that must hold between subject and information security attributes*].

FDP_IFF.2.3 The TSF shall enforce the [assignment: *additional information flow control SFP rules*].

FDP_IFF.2.4 The TSF shall provide the following [assignment: *list of additional SFP capabilities*]

FDP_IFF.2.5 The TSF shall explicitly authorise an information flow based on the following rules: [assignment: *rules, based on security attributes, that explicitly authorise information flows*].

FDP_IFF.2.6 The TSF shall explicitly deny an information flow based on the following rules: [assignment: *rules, based on security attributes, that explicitly deny information flows*].

FDP_IFF.2.7 **The TSF shall enforce the following relationships for any two valid information flow control security attributes:**

a) **There exists an ordering function that, given two valid security attributes, determines if the security attributes are equal, if one security attribute is greater than the other, or if the security attributes are incomparable; and**

b) **There exists a "least upper bound" in the set of security attributes, such that, given any two valid security attributes, there is a valid security attribute that is greater than or equal to the two valid security attributes; and**

c) **There exists a "greatest lower bound" in the set of security attributes, such that, given any two valid security attributes, there is a valid security attribute that is not greater than the two valid security attributes.**

Dependencies :**FDP_IFC.1 Subset Information Flow Control**

FMT_MSA.3 Static Attribute Initialisation

FDP_IFF.3 Limited Illicit Information Flows

Hierarchical to: no other components.

FDP_IFF.3.1 **The TSF shall enforce the [assignment: *information flow control SFP*] to limit the capacity of [assignment: *types of illicit information flows*] to a [assignment: *maximum capacity*].**

Dependencies :**AVA_INT.1 Covert channel analysis**

FDP_IFC.1 Subset Information Flow Control

FDP_IFF.4 Partial Elimination of Illicit Information Flows

Hierarchical to: FDP_IFF.3

FDP_IFF.4.1 The TSF shall enforce the [assignment: *information flow control SFP*] to limit the capacity of [assignment: *non-empty list of types of illicit information flows*] to a [assignment: *maximum capacity*].

FDP_IFF.4.2 **The TSF shall prevent the following types of [assignment: *non-empty list of types of illicit information flows*].**

Dependencies :AVA_INT.1 Covert channel analysis

FDP_IFC.1 Subset Information Flow Control

FDP_IFF.5 No Illicit Information Flows

Hierarchical to: FDP_IFF.4

FDP_IFF.5.1 **The TSF shall ensure that no illicit information flows exist to circumvent [assignment: *name of information flow control SFP*].**

Dependencies :**AVA_INT.3 Exhaustive covert channel analysis**

FDP_IFC.1 Subset Information Flow Control

FDP_IFF.6 Illicit Information Flow Monitoring

Hierarchical to: no other components.

FDP_IFF.6.1 **The TSF shall enforce the [assignment: *information flow control SFP*] to monitor the [assignment: *list of types of illicit information flows*] when it exceeds the** [**assignment:** ***maximum capacity*****].**

Dependencies :**AVA_INT.1 Covert channel analysis**

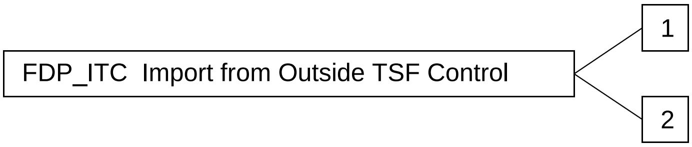
FDP_IFC.1 Subset Information Flow Control

6.7 Import from Outside TSF Control (FDP_ITC)

Family behaviour

This family defines the mechanisms for introduction of user data into the TOE such that it has appropriate security attributes and is appropriately protected. It is concerned with limitations on importation, determination of desired security attributes, and interpretation of security attributes associated with the user data.

Component levelling



This family contains two components to address the preservation of security attributes of imported user data for access control and information control policies.

Component FDP_ITC.1 Import of User Data Without Security Attributes requires that the security attributes correctly represent the user data and are supplied separately from the object.

Component FDP_ITC.2 Import of User Data with Security Attributes requires that security attributes correctly represent the user data and are accurately and unambiguously associated with the user data imported from outside the TSC.

Management: for FDP_ITC.1 and FDP_ITC.2

The following actions could be considered for the management functions in FMT Management:

a) The modification of the additional control rules used for import.

Audit: for FDP_ITC.1 and FDP_ITC.2

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful import of user data, including any security attributes.

b) Basic: All attempts to import user data, including any security attributes.

c) Detailed: The specification of security attributes for imported user data supplied by an authorised user.

FDP_ITC.1 Import of User Data Without Security Attributes

Hierarchical to: no other components.

FDP_ITC.1.1 **The TSF shall enforce the [assignment: *access control SFP and/or information flow control SFP*] when importing user data, controlled under the SFP, from outside of the TSC.**

FDP_ITC.1.2 **The TSF shall ignore any security attributes associated with the user data when imported from outside the TSC.**

FDP_ITC.1.3 **The TSF shall enforce the following rules when importing user data controlled under the SFP from outside the TSC: [assignment: *additional importation control rules*].**

Dependencies :[**FDP_ACC.1 Subset Access Control**, **and/or**

FDP_IFC.1 Subset Information Flow Control]

FMT_MSA.3 Static Attribute Initialisation

FDP_ITC.2 Import of User Data with Security Attributes

Hierarchical to: no other components.

FDP_ITC.2.1 **The TSF shall enforce the [assignment: *access control SFP and/or information flow control SFP*] when importing user data, controlled under the SFP, from outside of the TSC.**

FDP_ITC.2.2 **The TSF shall use the security attributes associated with the imported user data.**

FDP_ITC.2.3 **The TSF shall ensure that the protocol used provides for the unambiguous association between the security attributes and the user data received.**

FDP_ITC.2.4 **The TSF shall ensure that interpretation of the security attributes of the imported user data is as intended by the source of the user data.**

FDP_ITC.2.5 **The TSF shall enforce the following rules when importing user data controlled under the SFP from outside the TSC: [assignment: *additional importation control rules*].**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**

FDP_IFC.1 Subset Information Flow Control]

[FTP_ITC.1 Inter-TSF Trusted Channel or
FTP_TRP.1 Trusted Path]

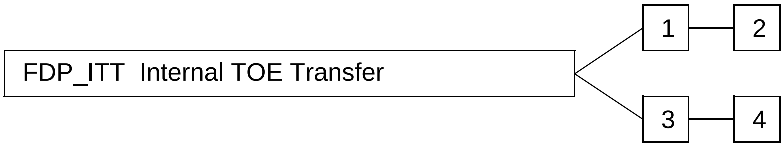
FPT_TDC.1 Inter-TSF Basic TSF Data Consistency

6.8 Internal TOE Transfer (FDP_ITT)

Family behaviour

This family provides requirements that address protection of user data when it is transferred between parts of a TOE across an internal channel. This may be contrasted with the FDP_UCT and FDP_UIT families, which provide protection for user data when it is transferred between distinct TSFs across an external channel, and FDP_ETC and FDP_ITC, which address transfer of data to or from outside the TSF's control.

Component levelling



FDP_ITT.1 Basic Internal Transfer Protection requires that user data be protected when transmitted between parts of the TOE.

FDP_ITT.2 Transmission Separation by Attribute requires separation of data based on the value of SFP-relevant attributes in addition to the first component.

FDP_ITT.3 Integrity Monitoring requires that the SF monitor user data transmitted between parts of the TOE for identified integrity errors.

FDP_ITT.4 Attribute-Based Integrity Monitoring expands on the third component by allowing the form of integrity monitoring to differ by SFP-relevant attribute.

Management: for FDP_ITT.1 and FDP_ITT.2

The following actions could be considered for the management functions in FMT Management:

a) If the TSF provides multiple methods to protect user data during transmission between physically separated parts of the TOE, the TSF could provide a pre-defined role with the ability to select the method that will be used.

Management: for FDP_ITT.3 and FDP_ITT.4

The following actions could be considered for the management functions in FMT Management:

a) The specification of the actions to be taken upon detection of an integrity error could be configurable.

Audit: for FDP_ITT.1 and FDP_ITT.2

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful transfers of user data, including identification of the protection method used.

b) Basic: All attempts to transfer user data, including the protection method used and any errors that occurred.

Audit: for FDP_ITT.3 and FDP_ITT.4

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful transfers of user data, including identification of the integrity protection method used.

b) Basic: All attempts to transfer user data, including the integrity protection method used and any errors that occurred.

c) Basic: Unauthorised attempts to change the integrity protection method.

d) Detailed: The action taken upon detection of an integrity error.

FDP_ITT.1 Basic Internal Transfer Protection

Hierarchical to: no other components.

FDP_ITT.1.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to prevent the [selection: *disclosure, modification, loss of use*] of user data when it is transmitted between physically-separated parts of the TOE.**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**
FDP_IFC.1 Subset Information Flow Control]

FDP_ITT.2 Transmission Separation by Attribute

Hierarchical to: FDP_ITT.1

FDP_ITT.2.1 The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to prevent the [selection: *disclosure, modification, loss of use*] of user data when it is transmitted between physically-separated parts of the TOE.

FDP_ITT.2.2 **The TSF shall separate data controlled by the SFP(s) when transmitted between physically-separated parts of the TOE, based on the values of the following: [assignment: *security attributes that require separation*].**

Dependencies :[FDP_ACC.1 Subset Access Control, and/or

FDP_IFC.1 Subset Information Flow Control]

FDP_ITT.3 Integrity Monitoring

Hierarchical to: no other components.

FDP_ITT.3.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to monitor user data transmitted between physically-separated parts of the TOE for the following errors: [assignment: *integrity errors*].**

FDP_ITT.3.2 **Upon detection of a data integrity error, the TSF shall [assignment: *specify the action to be taken upon integrity error*].**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**

FDP_IFC.1 Subset Information Flow Control]

FDP_ITT.1 Basic Internal Transfer Protection

FDP_ITT.4 Attribute-Based Integrity Monitoring

Hierarchical to: FDP_ITT.3

FDP_ITT.4.1 The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to monitor user data transmitted between physically-separated parts of the TOE for the following errors: [assignment: *integrity errors*], **based on the following attributes: [assignment: *security attributes that require separate transmission channels*].**

FDP_ITT.4.2 Upon detection of a data integrity error, the TSF shall [assignment: *specify the action to be taken upon integrity error*].

Dependencies :[FDP_ACC.1 Subset Access Control, and/or

FDP_IFC.1 Subset Information Flow Control]

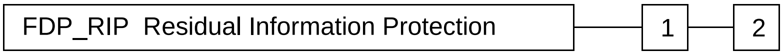
FDP_ITT.2 Transmission Separation by Attribute

6.9 Residual Information Protection (FDP_RIP)

Family behaviour

This family addresses the need to ensure that deleted information is no longer accessible, and that newly created objects do not contain information that should not be accessible. This family requires protection for information that has been logically deleted or released, but may still be present within the TOE.

Component levelling



FDP_RIP.1 Subset Residual Information Protection requires that the TSF ensure that any residual information content of any resources is unavailable to a defined subset of the objects in the TSC upon the resource's allocation or deallocation.

FDP_RIP.2 Full Residual Information Protection requires that the TSF ensure that any residual information content of any resources is unavailable to all objects upon the resource's allocation or deallocation.

Management: for FDP_RIP.1 and FDP_RIP.2

The following actions could be considered for the management functions in FMT Management:

a) The choice of when to perform residual information protection (i.e. upon allocation or deallocation) could be made configurable within the TOE.

Audit: for FDP_RIP.1 and FDP_RIP.2

There are no events identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FDP_RIP.1 Subset Residual Information Protection

Hierarchical to: no other components.

FDP_RIP.1.1 **The TSF shall ensure that any previous information content of a resource is made unavailable upon the [selection: *allocation of the resource to, deallocation of the resource from*] the following objects: [assignment: *list of objects*].**

Dependencies :No dependencies.

FDP_RIP.2 Full Residual Information Protection

Hierarchical to: **FDP_RIP.1**

FDP_RIP.2.1 The TSF shall ensure that any previous information content of a resource is made unavailable upon the [selection: *allocation of the resource to, deallocation of the resource from*] **all objects**.

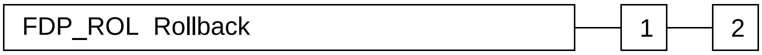
Dependencies :No dependencies.

6.10 Rollback (FDP_ROL)

Family behaviour

The rollback operation involves undoing the last operation or a series of operations, bounded by some limit, such as a period of time, and return to a previous known state. Rollback provides the ability to undo the effects of an operation or series of operations to preserve the integrity of the user data.

Component levelling



FDP_ROL.1 Basic Rollback addresses a need to roll back or undo a limited number of operations within the defined bounds.

FDP_ROL.2 Advanced Rollback addresses the need to roll back or undo all operations within the defined bounds.

Management: for FDP_ROL.1 and FDP_ROL.2

The following actions could be considered for the management functions in FMT Management:

a) The boundary limit to which rollback may be performed could be a configurable item within the TOE.

b) Permission to perform a rollback operation could be restricted to a well defined role.

Audit: for FDP_ROL.1 and FDP_ROL.2

The following events should be auditable if FAU_GEN Security Audit Data Generation is specified in the PP/ST:

a) Minimal: All successful rollback operations.

b) Basic: All attempts to perform rollback operations.

c) Detailed: All attempts to perform rollback operations, including identification of the types of operations rolled back.

FDP_ROL.1 Basic Rollback

Hierarchical to: no other components.

FDP_ROL.1.1 **The TSF shall enforce [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to permit the rollback of the [assignment: *list of operations*] on the [assignment: *list of objects*].**

FDP_ROL.1.2 **The TSF shall permit operations to be rolled back within the [assignment: *boundary limit to which rollback may be performed*].**

Dependencies :[**FDP_ACC.1 Subset Access Control, and/or**
FDP_IFC.1 Subset Information Flow Control]

FDP_ROL.2 Advanced Rollback

Hierarchical to: FDP_ROL.1

FDP_ROL.2.1 The TSF shall enforce [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to permit the rollback of **all the operations** on the [assignment: *list of objects*].

FDP_ROL.2.2 The TSF shall permit operations to be rolled back within the [assignment: *boundary limit to which rollback may be performed*].

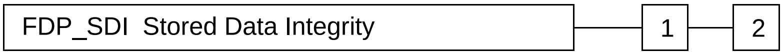
Dependencies :[FDP_ACC.1 Subset Access Control, and/or
FDP_IFC.1 Subset Information Flow Control]

6.11 Stored Data Integrity (FDP_SDI)

Family behaviour

This family provides requirements that address protection of user data while it is stored within the TSC. Integrity errors may affect user data stored in memory, or in a storage device. This family differs from FDP_ITT Internal TOE Transfer which protects the user data from integrity errors while being transferred within the TOE.

Component levelling



FDP_SDI Stored Data Integrity

1

2

FDP_SDI.1 Stored Data Integrity Monitoring requires that the SF monitor user data stored within the TSC for identified integrity errors.

FDP_SDI.2 Stored Data Integrity Monitoring and Action adds the additional capability to the first component by allowing for actions to be taken as a result of an error detection.

Management: for FDP_SDI.1

There are no management activities foreseen for this component.

Management: for FDP_SDI.2

The following actions could be considered for the management functions in FMT Management:

a) The actions to be taken upon the detection of an integrity error could be configurable.

Audit: FDP_SDI.1

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful attempts to check the integrity of user data, including an indication of the results of the check.

b) Basic: All attempts to check the integrity of user data, including an indication of the results of the check, if performed.

c) Detailed: The type of integrity error that occurred.

Audit: for FDP_SDI.2

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Successful attempts to check the integrity of user data, including an indication of the results of the check.

b) Basic: All attempts to check the integrity of user data, including an indication of the results of the check, if performed.

c) Detailed: The type of integrity error that occurred.

d) Detailed: The action taken upon detection of an integrity error.

FDP_SDI.1 Stored Data Integrity Monitoring

Hierarchical to: no other components.

FDP_SDI.1.1 **The TSF shall monitor user data stored within the TSC for [assignment: *integrity errors*] on all objects, based on the following attributes: [assignment: *user data attributes*].**

Dependencies :No dependencies.

FDP_SDI.2 Stored Data Integrity Monitoring and Action

Hierarchical to: FDP_SDI.1

FDP_SDI.2.1 The TSF shall monitor user data stored within the TSC for [assignment: *integrity errors*] on all objects, based on the following attributes: [assignment: *user data attributes*].

FDP_SDI.2.2 **Upon detection of a data integrity error, the TSF shall [assignment: *action to be taken*].**

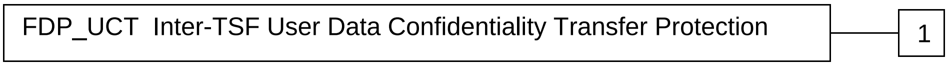
Dependencies :No dependencies.

6.12 Inter-TSF User Data Confidentiality Transfer Protection (FDP_UCT)

Family behaviour

This family defines the requirements for ensuring the confidentiality of user data when it is transferred using an external channel between distinct TOEs or users on distinct TOEs.

Component levelling


FDP_UCT Inter-TSF User Data Confidentiality Transfer Protection
1

In FDP_UCT.1 Basic Data Exchange Confidentiality, the goal is to provide protection from disclosure of user data while in transit.

Management: for FDP_UCT.1

There are no management activities foreseen for this component.

Audit: for FDP_UCT.1

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

a) Minimal: The identity of any user or subject using the data exchange mechanisms.

b) Basic: The identity of any unauthorised user or subject attempting to use the data exchange mechanisms.

c) Basic: A reference to the names or other indexing information useful in identifying the user data that was transmitted or received. This could include security attributes associated with the information.

FDP_UCT.1 Basic Data Exchange Confidentiality

Hierarchical to: no other components.

FDP_UCT.1.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to be able to [selection*: transmit, receive*] objects in a manner protected from unauthorised disclosure.**

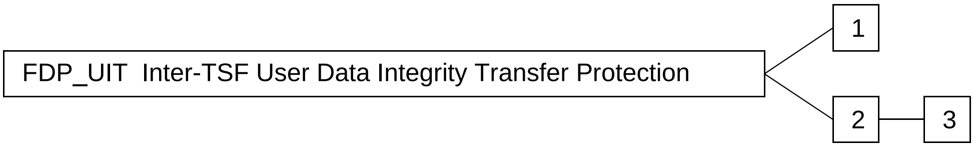
Dependencies :**[FTP_ITC.1 Inter-TSF Trusted Channel, or**
FTP_TRP.1 Trusted Path]
[FDP_ACC.1 Subset Access Control, and/or
FDP_IFC.1 Subset Information Flow Control]

6.13 Inter-TSF User Data Integrity Transfer Protection (FDP_UIT)

Family behaviour

This family defines the requirements for providing integrity for user data in transit between the TSF and another Trusted IT Product and recovering from detectable errors. At a minimum, this family monitors the integrity of user data for modifications. Furthermore, this family supports different ways of correcting detected integrity errors.

Component levelling



FDP_UIT.1 Data Exchange Integrity addresses detection of modifications, deletions, insertions, and replay errors of the user data transmitted.

FDP_UIT.2 Source Data Exchange Recovery addresses recovery of the original user data by the receiving TSF with help from the source Trusted IT Product.

FDP_UIT.3 Destination Data Exchange Recovery addresses recovery of the original user data by the receiving TSF on its own without any help from the source Trusted IT Product.

Management: for FDP_UIT.1, FDP_UIT.2, and FDP_UIT.3

There are no management activities foreseen for this component.

Audit: for FDP_UIT.1

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

a) Minimal: The identity of any user or subject using the data exchange mechanisms.

b) Basic: The identity of any user or subject attempting to use the user data exchange mechanisms, but who is unauthorised to do so.

c) Basic: A reference to the names or other indexing information useful in identifying the user data that was transmitted or received. This could include security attributes associated with the user data.

d) Basic: Any identified attempts to block transmission of user data.

e) Detailed: The types and/or effects of any detected modifications of transmitted user data.

Audit: for FDP_UIT.2 and FDP_UIT.3

The following events should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

a) Minimal: The identity of any user or subject using the data exchange mechanisms.

b) Minimal: Successful recovery from errors including they type of error that was detected.

c) Basic: The identity of any user or subject attempting to use the user data exchange mechanisms, but who is unauthorised to do so.

d) Basic: A reference to the names or other indexing information useful in identifying the user data that was transmitted or received. This could include security attributes associated with the user data.

e) Basic: Any identified attempts to block transmission of user data.

f) Detailed: The types and/or effects of any detected modifications of transmitted user data.

FDP_UIT.1 Data Exchange Integrity

Hierarchical to: no other components.

FDP_UIT.1.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to be able to [selection: *transmit, receive*] user data in a manner protected from [selection: *modification, deletion, insertion, replay*] errors.**

FDP_UIT.1.2 **The TSF shall be able to determine on receipt of user data, whether [selection: *modification, deletion, insertion, or replay*] has occurred.**

Dependencies :**[FTP_ITC.1 Inter-TSF Trusted Channel, or**
FTP_TRP.1 Trusted Path]
[FDP_ACC.1 Subset Access Control, and/or
FDP_IFC.1 Subset Information Flow Control]

FDP_UIT.2 Source Data Exchange Recovery

Hierarchical to: no other components.

FDP_UIT.2.1 **The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to be able to recover from [assignment: *list of recoverable errors*] with the help of the source Trusted IT Product.**

Dependencies :**[FDP_ACC.1 Subset Access Control, and/or**

FDP_IFC.1 Subset Information Flow Control]

FTP_ITC.1 Inter-TSF Trusted Channel

FDP_UIT.3   Destination Data Exchange Recovery

Hierarchical to: **FDP_UIT.2**

FDP_UIT.3.1 The TSF shall enforce the [assignment: *access control SFP(s) and/or information flow control SFP(s)*] to be able to recover from [assignment: *list of recoverable errors*] **without any help from the source Trusted IT Product.**

Dependencies :[FDP_ACC.1 Subset Access Control, and/or

FDP_IFC.1 Subset Information Flow Control]

FTP_ITC.1 Inter-TSF Trusted Channel

7 Class FIA: Identification and Authentication

Families in this class address the requirements for functions to establish and verify a claimed user identity.

Identification and Authentication is required to ensure that users are associated with the proper Security Attributes (e.g. identity, groups, roles, security or integrity levels).

The unambiguous identification of authorised users and the correct association of security attributes with users and subjects is critical to the enforcement of the intended security policies. The families in this class deal with determining and verifying the identity of users, determining their authority to interact with the TOE, and with the correct association of security attributes for each authorised user. Other classes of requirements (e.g. User Data Protection, Security Audit) are dependent upon correct identification and authentication of users in order to be effective.

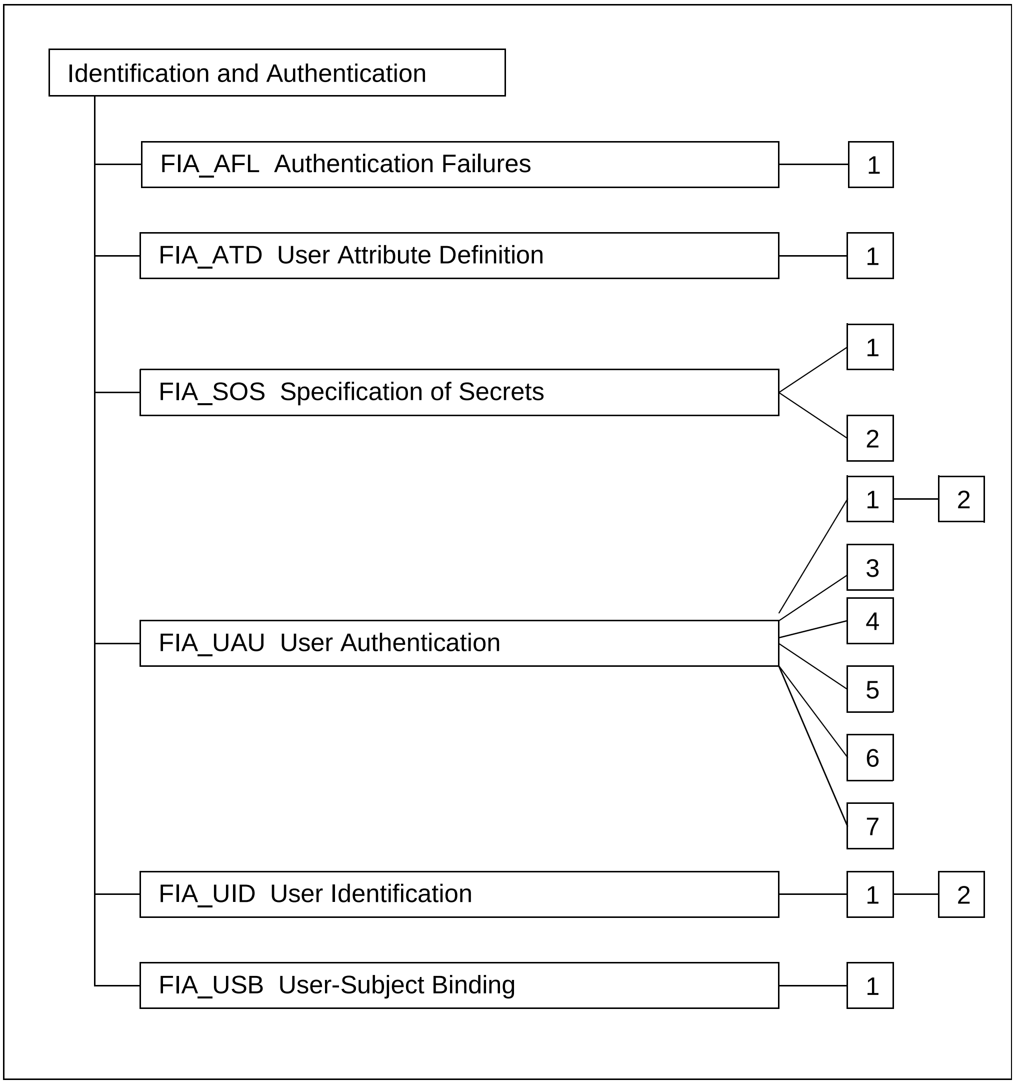

Identification and Authentication
FIA_AFL Authentication Failures
1
FIA_ATD User Attribute Definition
1
FIA_SOS Specification of Secrets
1
2
FIA_UAU User Authentication
1
2
3
4
5
6
7
FIA_UID User Identification
1
2
FIA_USB User-Subject Binding
1

Figure 7.1 - Identification and Authentication class decomposition

7.1 Authentication Failures (FIA_AFL)

Family behaviour

This family contains requirements for defining values for some number of unsuccessful authentication attempts and TSF actions in cases of authentication attempt failures. Parameters include, but are not limited to, the number of failed authentication attempts and time thresholds.

Component levelling

FIA_AFL Authentication Failures
1

FIA_AFL.1 requires that the TSF be able to terminate the session establishment process after a specified number of unsuccessful user authentication attempts. It also requires that, after termination of the session establishment process, the TSF be able to disable the user account or the point of entry (e.g. workstation) from which the attempts were made until an administrator-defined condition occurs.

Management: FIA_AFL.1

The following actions could be considered for the management functions in FMT:

a) management of the threshold for unsuccessful authentication attempts;

b) management of actions to be taken in the event of an authentication failure.

Audit: FIA_AFL.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: the reaching of the threshold for the unsuccesful authentication attempts and the actions (e.g. disabling of a terminal) taken and the subsequent, if appropriate, restoration to the normal state (e.g. re-enabling of a terminal).

FIA_AFL.1 Authentication Failure Handling

Hierarchical to: no other components.

FIA_AFL.1.1 **The TSF shall detect when [assignment: *number*] unsuccessful authentication attempts occur related to [assignment: *list of authentication events*].**

FIA_AFL.1.2 **When the defined number of unsuccessful authentication attempts has been met or surpassed, the TSF shall [assignment: *list of actions*].**

Dependencies :**FIA_UAU.1 Timing of authentication**

7.2 User Attribute Definition (FIA_ATD)

Family behaviour

All authorised users may have a set of security attributes, other than the user's identity, that is used to enforce the TSP. This family defines the requirements for associating user security attributes with users as needed to support the TSP.

Component levelling

FIA_ATD.1 User Attribute Definition, allows user security attributes for each user to be maintained individually.

Management: FIA_ATD.1

The following actions could be considered for the management functions in FMT:

a) if so indicated in the assignment, the authorised administrator might be able to define additional security attributes for users.

Audit: FIA_ATD.1

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FIA_ATD.1 User Attribute Definition

Hierarchical to: no other components.

FIA_ATD.1.1 **The TSF shall maintain the following list of security attributes belonging to individual users: [assignment: *list of security attributes*].**

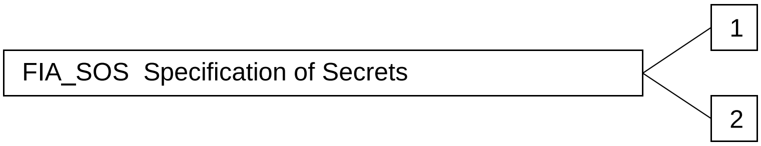
Dependencies :No dependencies.

7.3 Specification of Secrets (FIA_SOS)

Family behaviour

This family defines requirements for mechanisms that enforce defined quality metrics on provided secrets and generate secrets to satisfy the defined metric.

Component levelling



FIA_SOS.1 Verification of Secrets requires the TSF to verify that secrets meet defined quality metrics.

FIA_SOS.2 TSF Generation of Secrets requires the TSF to be able to generate secrets that meet defined quality metrics.

Management: FIA_SOS.1

The following actions could be considered for the management functions in FMT:

a) the management of the metric used to verify the secrets.

Management: FIA_SOS.2

The following actions could be considered for the management functions in FMT:

a) the management of the metric used to generate the secrets.

Audit: FIA_SOS.1, FIA_SOS.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Rejection by the TSF of any tested secret;

b) Basic: Rejection or acceptance by the TSF of any tested secret;

c) Detailed: Identification of any changes to the defined quality metrics.

FIA_SOS.1 Verification of Secrets

Hierarchical to: no other components.

FIA_SOS.1.1 **The TSF shall provide a mechanism to verify that secrets meet [assignment: *a defined quality metric*].**

Dependencies :No dependencies.

FIA_SOS.2 TSF Generation of Secrets

Hierarchical to: no other components.

FIA_SOS.2.1 **The TSF shall provide a mechanism to generate secrets that meet [assignment: *a defined quality metric*].**

FIA_SOS.2.2 **The TSF shall be able to enforce the use of TSF generated secrets for [assignment: *list of TSF functions*].**

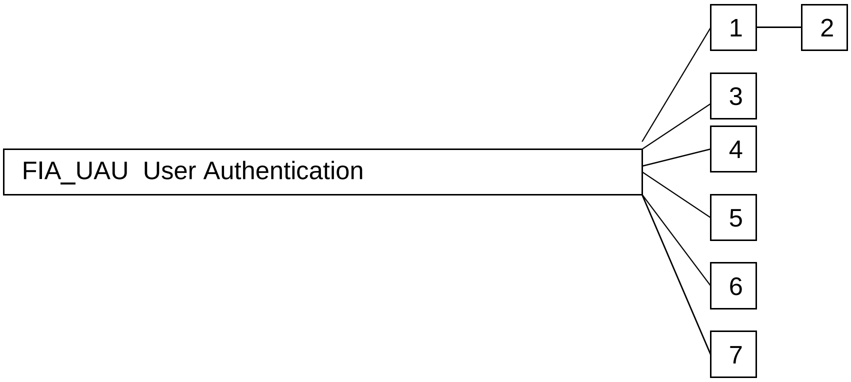
Dependencies :No dependencies.

7.4 User Authentication (FIA_UAU)

Family behaviour

This family defines the types of user authentication mechanisms supported by the TSF. This family also defines the required attributes on which the user authentication mechanisms must be based.

Component levelling



FIA_UAU.1 Timing of authentication, allows a user to perform certain actions prior to the authentication of the user's identity.

FIA_UAU.2 User authentication before any action, requires that users authenticate themselves before any action will be allowed by the TSF.

FIA_UAU.3 Unforgeable Authentication, requires the authentication mechanism to be able to detect and prevent the use of authentication data that has been forged or copied.

FIA_UAU.4 Single-use Authentication Mechanisms, requires an authentication mechanism that operates with single-use authentication data.

FIA_UAU.5 Multiple Authentication Mechanisms, requires that different authentication mechanisms be provided and used to authenticate user identities for specific events.

FIA_UAU.6 Re-authenticating, requires the ability to specify events for which the user needs to be re-authenticated.

FIA_UAU.7 Protected authentication feedback, require that only limited feedback information is provided to the user during the authentication.

Management: FIA_UAU.1

The following actions could be considered for the management functions in FMT:

a) management of the authentication data by an administrator;

b) management of the authentication data by the associated user;

c) managing the list of actions that can be taken before the user is authenticated.

Management: FIA_UAU.2

The following actions could be considered for the management functions in FMT:

a) management of the authentication data by an administrator;

b) management of the authentication data by the user associated with this data.

Management: FIA_UAU.3, FIA_UAU.4 and FIA_UAU.7

There are no management activities foreseen.

Management: FIA_UAU.5

The following actions could be considered for the management functions in FMT:

a) the management of authentication mechanisms;

b) the management of the rules for authentication.

Management: FIA_UAU.6

The following actions could be considered for the management functions in FMT:

a) if an authorised administrator could request re-authentication, the management includes a re-authentication request.

Audit: FIA_UAU.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Unsuccessful use of the authentication mechanism;

b) Basic: All use of the authentication mechanism;

c) Detailed: All TSF mediated actions performed before authentication of the user.

Audit: FIA_UAU.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Unsuccessful use of the authentication mechanism;

b) Basic: All use of the authentication mechanism.

Audit: FIA_UAU.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Detection of fraudulent authentication data;

b) Basic: All immediate measures taken and results of checks on the fraudulent data.

Audit: FIA_UAU.4

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Attempts to reuse authentication data.

Audit: FIA_UAU.5

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: The final decision on authentication;

b) Basic: The result of each activated mechanism together with the final decision.

Audit: FIA_UAU.6

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Failure of reauthentication;

b) Basic: All reauthentication attempts.

Audit: FIA_UAU.7

There are no auditable events foreseen.

FIA_UAU.1 Timing of authentication

Hierarchical to: no other components.

FIA_UAU.1.1 **The TSF shall allow [assignment: *list of TSF mediated actions*] on behalf of the user to be performed before the user is authenticated.**

FIA_UAU.1.2 **The TSF shall require each user to be successfully authenticated before allowing any other TSF-mediated actions on behalf of that user.**

Dependencies :**FIA_UID.1 Timing of Identification**

FIA_UAU.2 User authentication before any action

Hierarchical to: **FIA_UAU.1 Timing of authentication**

FIA_UAU.2.1 The TSF shall require each user to be successfully authenticated before allowing **any other TSF-mediated actions** on behalf of that user.

Dependencies :**FIA_UID.1 Timing of Identification**

FIA_UAU.3 Unforgeable Authentication

Hierarchical to: no other components.

FIA_UAU.3.1 **The TSF shall [selection: *detect, prevent*] use of authentication data that has been forged by any user of the TSF.**

FIA_UAU.3.2 **The TSF shall [selection: *detect, prevent*] use of authentication data that has been copied from any other user of the TSF.**

Dependencies :No dependencies.

FIA_UAU.4 Single-use Authentication Mechanisms

Hierarchical to: no other components.

FIA_UAU.4.1 **The TSF shall prevent reuse of authentication data related to [assignment: *identified authentication mechanism(*s)].**

Dependencies :No dependencies.

FIA_UAU.5 Multiple Authentication Mechanisms

Hierarchical to: no other components.

FIA_UAU.5.1 **The TSF shall provide [assignment: *list of multiple authentication mechanisms*] to support user authentication.**

FIA_UAU.5.2 **The TSF shall authenticate any user's claimed identity according to the [assignment: *rules describing how the multiple authentication mechanisms provide authentication*].**

Dependencies :No dependencies.

FIA_UAU.6 Re-authenticating

Hierarchical to: no other components.

FIA_UAU.6.1 **The TSF shall re-authenticate the user under the conditions [assignment: *list of conditions under which re-authentication is required*].**

Dependencies :No dependencies.

FIA_UAU.7 Protected authentication feedback

Hierarchical to: no other components.

FIA_UAU.7.1 **The TSF shall provide only [assignment: *list of feedback*] to the user while the authentication is in progress.**

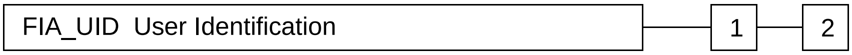
Dependencies :**FIA_UAU.1 Timing of authentication**

7.5 User Identification (FIA_UID)

Family behaviour

This family defines the conditions under which users shall be required to identify themselves before performing any other actions that are to be mediated by the TSF and which require user identification.

Component levelling



FIA_UID.1 Timing of Identification, allows users to perform certain actions before being identified by the TSF.

FIA_UID.2 User Identification before any action, require that users identify themselves before any action will be allowed by the TSF.

Management: FIA_UID.1

The following actions could be considered for the management functions in FMT:

a) the management of the user identities;

b) if an authorised administrator can change the actions allowed before identification, the managing of the action lists.

Management: FIA_UID.2

The following actions could be considered for the management functions in FMT:

a) the management of the user identities.

Audit: FIA_UID.1, FIA_UID.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Unsuccessful use of the user identification mechanism, including the user identity provided;

b) Basic: All use of the user identification mechanism, including the user identity provided.

FIA_UID.1 Timing of Identification

Hierarchical to: no other components.

FIA_UID.1.1 **The TSF shall allow [assignment: *list of TSF-mediated actions*] on behalf of the user to be performed before the user is identified.**

FIA_UID.1.2 **The TSF shall require each user to be succesfully identified before allowing any other TSF-mediated actions on behalf of that user.**

Dependencies :No dependencies.

FIA_UID.2 User Identification before any action

Hierarchical to: **FIA_UID.1 Timing of Identification**

FIA_UID.2.1 The TSF shall require each user to identify itself before allowing **any other TSF-mediated actions** on behalf of that user.

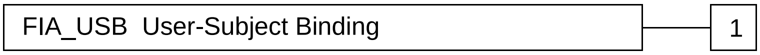
Dependencies :No dependencies.

7.6 User-Subject Binding (FIA_USB)

Family behaviour

An authenticated user, in order to use the TOE, typically activates a subject. The user's security attributes are associated (totally or partially) with this subject. This family defines requirements to create and maintain the association of the user's security attributes to a subject acting on the user's behalf.

Component levelling



FIA_USB.1 User-Subject Binding requires the maintenance of an association between the user's security attributes and a subject acting on the user's behalf.

Management: FIA_USB.1

The following actions could be considered for the management functions in FMT:

a) an authorised administrator can define default subject security attributes.

Audit: FIA_USB.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Unsuccessful binding of user security attributes to a subject (e.g. creation of a subject).

b) Basic: Success and failure of binding of user security attributes to a subject (e.g. success and failure to create a subject).

FIA_USB.1 User-Subject Binding

Hierarchical to: no other components.

FIA_USB.1.1 **The TSF shall associate the appropriate user security attributes with subjects acting on behalf of that user.**

Dependencies :**FIA_ATD.1 User Attribute Definition**

8 Class FMT: Security Management

This class is intended to specify the management of several aspects of the TSF: security attributes, TSF data and functions. The different management roles and their interaction, such as separation of capability, can be specified.

This class has several objectives:

a) management of TSF data, which include, for example, banners;

b) management of security attributes, which include, for example, the Access Control Lists, and Capability Lists;

c) management of functions of the TSF, which includes, for example, the selection of functions, and rules or conditions influencing the behaviour of the TSF;

d) definition of security roles.

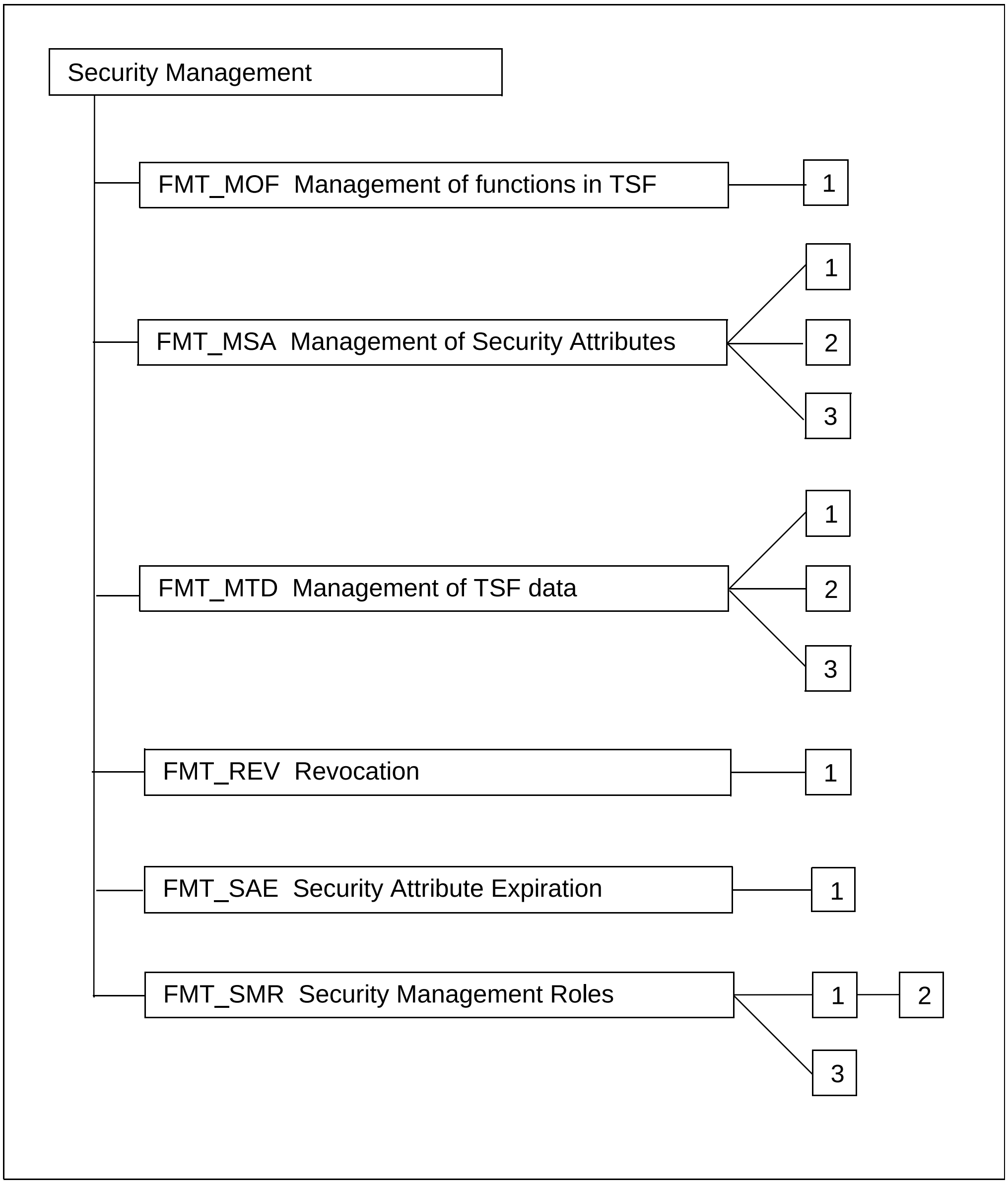

Security Management
FMT_MOF Management of functions in TSF
1
FMT_MSA Management of Security Attributes
1
2
3
FMT_MTD Management of TSF data
1
2
3
FMT_REV Revocation
1
FMT_SAE Security Attribute Expiration
1
FMT_SMR Security Management Roles
1
2
3

Figure 8.1 - Security Management class decomposition

8.1 Management of Functions in TSF (FMT_MOF)

Family behaviour

This family allows authorised users control over the management of functions in the TSF. Examples of functions in the TSF include the audit functions and the multiple authentication functions.

Component levelling

FMT_MOF.1 Management of Security Functions Behaviour allows the authorised users (roles) to manage the behaviour of functions in the TSF that use rules or have specified conditions that may be manageable.

Management: FMT_MOF.1

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can interact with the functions in the TSF;

Audit: FMT_MOF.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: All modifications in the behaviour of the functions in the TSF.

FMT_MOF.1 Management of Security Functions Behaviour

Hierarchical to: no other components.

FMT_MOF.1.1 **The TSF shall restrict the ability to [selection: *determine the behaviour of, disable, enable, modify the behaviour of*] the functions [assignment: *list of functions*] to [assignment: *the authorised identified roles*].**

Dependencies :**FMT_SMR.1 Security Roles**

8.2 Management of Security Attributes (FMT_MSA)

Family behaviour

This family allows authorised users control over the management of security attributes. This management might include capabilities for viewing and modifying of security attributes.

Component levelling

FMT_MSA Management of Security Attributes
1
2
3

FMT_MSA.1 Management of Security Attributes allows authorised users (roles) to manage the specified security attributes.

FMT_MSA.2 Secure Security Attributes ensures that values assigned to security attributes are valid with respect to the secure state.

FMT_MSA.3 Static Attribute Initialisation ensures that the default values of security attributes are appropriately either permissive or restrictive in nature.

Management: FMT_MSA.1

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can interact with the security attributes.

Management: FMT_MSA.2

There are no additional management activities foreseen for this component.

Management: FMT_MSA.3

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can specify initial values;

b) managing the permissive or restrictive setting of default values for a given access control SFP.

Audit: FMT_MSA.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: All modifications of the values of security attributes.

Audit: FMT_MSA.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: All offered and rejected values for a security attribute;

b) Detailed: All offered and accepted secure values for a security attribute.

Audit: FMT_MSA.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: Modifications of the default setting of permissive or restrictive rules.

b) Basic: All modifications of the initial values of security attributes.

FMT_MSA.1 Management of Security Attributes

Hierarchical to: no other components.

FMT_MSA.1.1 **The TSF shall enforce the [assignment: *access control SFP, information flow control SFP*] to restrict the ability to [selection: *change_default, query, modify, delete, [assignment: other operations]*] the security attributes [assignment: *list of security attributes*] to [assignment: *the authorised identified roles*].**

Dependencies :**[FDP_ACC.1 Subset Access Control or**

FDP_IFC.1 Subset Information Flow Control]

FMT_SMR.1 Security Roles

FMT_MSA.2 Secure Security Attributes

Hierarchical to: no other components.

FMT_MSA.2.1 **The TSF shall ensure that only secure values are accepted for security attributes.**

Dependencies :**ADV_SPM.1 Informal TOE security policy model**
[FDP_ACC.1 Subset Access Control or
FDP_IFC.1 Subset Information Flow Control]
FMT_MSA.1 Management of Security Attributes
FMT_SMR.1 Security Roles

FMT_MSA.3 Static Attribute Initialisation

Hierarchical to: no other components.

FMT_MSA.3.1 The TSF shall enforce the [assignment: *access control SFP, information flow control SFP*] to provide [selection: *restrictive, permissive, other property*] default values for security attributes that are used to enforce the *SFP*.

FMT_MSA.3.2 The TSF shall allow the [assignment: *the authorised identified roles*] to specify alternative initial values to override the default values when an object or information is created.

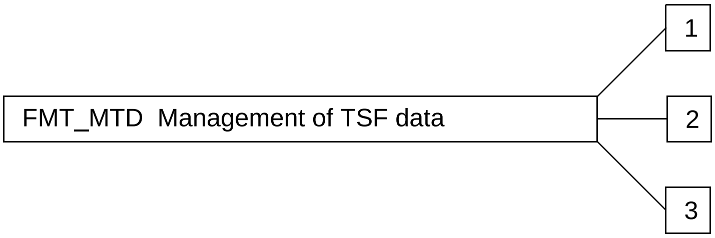
Dependencies :**FMT_MSA.1 Management of Security Attributes**
FMT_SMR.1 Security Roles

8.3 Management of TSF data (FMT_MTD)

Family behaviour

This family allows authorised users (roles) control over the management of TSF data. Examples of TSF data include audit information, clock, system configuration and other TSF configuration parameters.

Component levelling



FMT_MTD.1 Management of TSF Data allows authorised users to manage TSF data.

FMT_MTD.2 Management of Limits on TSF Data specifies the action to be taken if limits on TSF data are reached or exceeded.

FMT_MTD.3 Secure TSF Data ensures that values assigned to TSF data are valid with respect to the secure state.

Management: FMT_MTD.1

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can interact with the TSF data.

Management: FMT_MTD.2

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can interact with the limits on the TSF data.

Management: FMT_MTD.3

There are no additional management activities foreseen for this component.

Audit: FMT_MTD.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: All modifications to the values of TSF data.

Audit: FMT_MTD.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: All modifications to the limits on TSF data;

b) Basic: All modifications in the actions to be taken in case of violation of the limits.

Audit: FMT_MTD.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: All rejected values of TSF data.

FMT_MTD.1 Management of TSF Data

Hierarchical to: no other components.

FMT_MTD.1.1 **The TSF shall restrict the ability to [selection: *change_default, query, modify, delete, clear, [assignment: other operations]*] the [assignment: *list of TSF data*] to [assignment: *the authorised identified roles*].**

Dependencies :**FMT_SMR.1 Security Roles**

FMT_MTD.2 Management of Limits on TSF Data

Hierarchical to: no other components.

FMT_MTD.2.1 **The TSF shall restrict the specification of the limits for [assignment: *list of TSF data*] to [assignment: *the authorised identified roles*].**

FMT_MTD.2.2 **The TSF shall take the following actions, if the TSF data are at, or exceed, the indicated limits: [assignment: *actions to be taken*].**

Dependencies :**FMT_MTD.1 Management of TSF Data**
FMT_SMR.1 Security Roles

FMT_MTD.3 Secure TSF Data

Hierarchical to: no other components.

FMT_MTD.3.1 **The TSF shall ensure that only secure values are accepted for TSF data.**

Dependencies :**ADV_SPM.1 Informal TOE security policy model**
FMT_MTD.1 Management of TSF Data

8.4 Revocation (FMT_REV)

Family behaviour

This family addresses revocation of security attributes for a variety of entities within a TOE.

Component levelling

FMT_REV.1 Revocation provides for revocation of security attributes to be enforced at some point in time.

Management: FMT_REV.1

The following actions could be considered for the management functions in FMT Management:

a) managing the group of roles that can invoke revocation of security attributes;

b) managing the lists of users, subjects, objects and other resources for which revocation is possible;

c) managing the revocation rules.

Audit: FMT_REV.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: unsuccessful revocation of security attributes;

b) Minimal: All attempts to revoke security attributes.

FMT_REV.1 Revocation

Hierarchical to: no other components.

FMT_REV.1.1 **The TSF shall restrict the ability to revoke security attributes associated with the [selection: *users, subjects, objects, other additional resources*] within the TSC to [assignment: *the authorised identified roles*].**

FMT_REV.1.2 **The TSF shall enforce the rules [assignment: *specification of revocation rules*].**

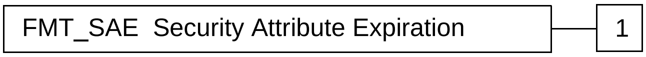
Dependencies :**FMT_SMR.1 Security Roles**

8.5 Security Attribute Expiration (FMT_SAE)

Family behaviour

This family addresses the capability to enforce time limits for the validity of security attributes.

Component levelling


FMT_SAE Security Attribute Expiration

1

FMT_SAE.1 Time-Limited Authorisation provides the capability for an authorised user to specify an expiration time on specified security attributes.

Management: FMT_SAE.1

The following actions could be considered for the management functions in FMT Management:

a) managing the list of security attributes for which expiration is to be supported;

b) the actions to be taken if the expiration time has passed.

Audit: FMT_SAE.1

The following actions should be audited if FAU Security Audit is included in the PP/ST:

a) Basic: Specification of the expiration time for an attribute;

b) Basic: Action taken due to attribute expiration.

FMT_SAE.1 Time-Limited Authorisation

Hierarchical to: no other components.

FMT_SAE.1.1 The TSF shall restrict the capability to specify an expiration time for [assignment: *list of security attributes for which expiration is to be supported*] to [assignment: *the authorised identified roles*].

FMT_SAE.1.2 For each of these security attributes, the TSF shall be able to [assignment: *list of actions to be taken for each security attribute*] after the expiration time for the indicated security attribute has passed.

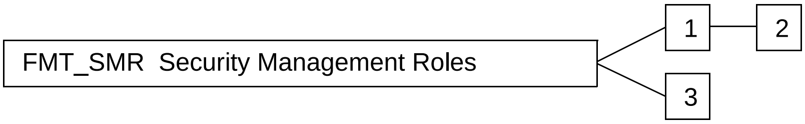
Dependencies :**FMT_SMR.1 Security Roles**
FPT_STM.1 Reliable Time Stamps

8.6 Security Management Roles (FMT_SMR)

Family behaviour

This family is intended to control the assignment of different roles to users. The capabilities of these roles with respect to security management are described in the other families in this class.

Component levelling



FMT_SMR.1 Security Roles specifies the roles with respect to security that the TSF recognises.

FMT_SMR.2 Restrictions on Security Roles specifies that in addition to the specification of the roles, there are rules that control the relationship between the roles.

FMT_SMR.3 Assuming Roles requires that an explicit request is given to the TSF to assume a role.

Management: FMT_SMR.1

The following actions could be considered for the management functions in FMT Management:

a) managing the group of users that are part of a role.

Management: FMT_SMR.2

The following actions could be considered for the management functions in FMT Management:

a) managing the group of users that are part of a role;

b) managing the conditions that the roles must satisfy.

Management: FMT_SMR.3

There are no additional management activities foreseen for this component.

Audit: FMT_SMR.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: modifications to the group of users that are part of a role;

b) Detailed: every use of the rights of a role.

Audit: FMT_SMR.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: modifications to the group of users that are part of a role;

b) Minimal: unsuccessful attempts to use a role due to the given conditions on the roles;

c) Detailed: every use of the rights of a role.

Audit: FMT_SMR.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: explicit request to assume a role.

FMT_SMR.1 Security Roles

Hierarchical to: no other components.

FMT_SMR.1.1 **The TSF shall maintain the roles [assignment: *the authorised identified roles*].**

FMT_SMR.1.2 **The TSF shall be able to associate users with roles.**

Dependencies :**FIA_UID.1 Timing of Identification**

FMT_SMR.2 Restrictions on Security Roles

Hierarchical to: **FMT_SMR.1 Security Roles**

FMT_SMR.2.1 The TSF shall maintain the roles: [assignment: *the authorised identified roles*].

FMT_SMR.2.2 The TSF shall be able to associate users with roles.

FMT_SMR.2.3 **The TSF shall ensure that the conditions [assignment: *conditions for the different roles*] are satisfied.**

Dependencies :No dependencies.

FMT_SMR.3 Assuming Roles

Hierarchical to: no other components.

FMT_SMR.3.1 The TSF shall require an explicit request to assume the following roles: [assignment: *the roles*].

Dependencies :**FMT_SMR.1 Security Roles**

9 Class FPR: Privacy

This class contains privacy requirements. These requirements provide a user protection against discovery and misuse of identity by other users.

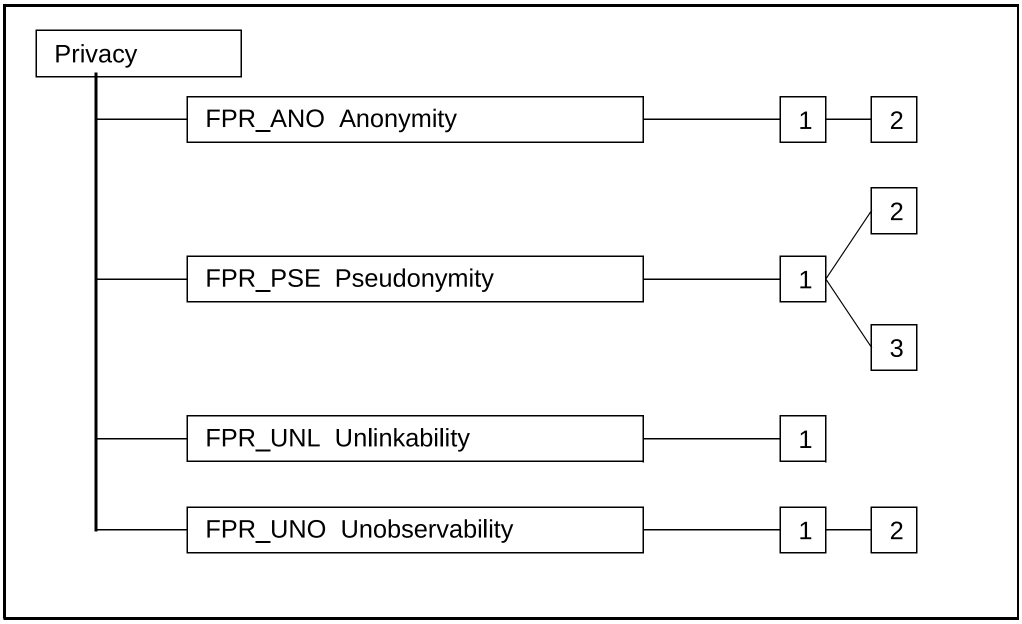


Figure 9.1 - Privacy class decomposition

9.1 Anonymity (FPR_ANO)

Family behaviour

This family ensures that a user may use a resource or service without disclosing the user's identity. The requirements for Anonymity provide protection of the user identity. Anonymity is not intended to protect the subject identity.

Component levelling

FPR_ANO Anonymity
1
2

FPR_ANO.1 Anonymity requires that other users or subjects are unable to determine the identity of a user bound to a subject or operation.

FPR_ANO.2 TSF Anonymity enhances the requirements of FPR_ANO.1 by ensuring that the TSF does not ask for the user identity.

Management:

There are no management activities foreseen for these components.

Audit:

The following actions shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: The invocation of the anonymity mechanism.

FPR_ANO.1 Anonymity

Hierarchical to: no other components.

FPR_ANO.1.1 **The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to determine the real user name bound to [assignment: *list of subjects and/or operations and/or objects*].**

Dependencies :No dependencies.

FPR_ANO.2 TSF Anonymity

Hierarchical to: FPR_ANO.1

FPR_ANO.2.1 The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including*, *excluding*] authorised users, are unable to determine the real user name bound to [assignment: *list of subjects and/or operations and/or objects*].

FPR_ANO.2.2 **The TSF shall not solicit any reference to the real user name in order to initiate actions on behalf of [assignment: *list of subjects*] or subjects requesting [assignment: *list of operations*].**

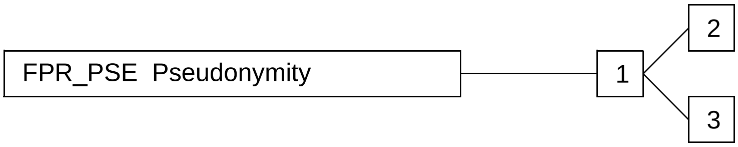
Dependencies :No dependencies.

9.2 Pseudonymity (FPR_PSE)

Family behaviour

This family ensures that a user may use a resource or service without disclosing its user identity, but can still be accountable for that use.

Component levelling



FPR_PSE.1 Pseudonymity requires that a set of users and/or subjects are unable to determine the identity of a user bound to a subject or operation, but that this user is still accountable for its actions.

FPR_PSE.2 Reversible Pseudonymity requires the TSF to provide a capability to determine the original user identity based on a provided alias.

FPR_PSE.3 Alias Pseudonymity requires the TSF to follow certain construction rules for the alias to the user identity.

Management:

There are no management activities foreseen for these components.

Audit:

The following actions shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: The subject /user that requested resolution of the user identity should be audited.

FPR_PSE.1 Pseudonymity

Hierarchical to: no other components.

FPR_PSE.1.1 **The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to determine the real user name bound to [assignment: *list of subjects and/or operations and/or objects*].**

FPR_PSE.1.2 **The TSF shall be able to provide [assignment: *number of aliases*] aliases of the real user name to [assignment: *list of subjects*].**

FPR_PSE.1.3 **The TSF shall [selection: *determine an alias for a user, accept the alias from the user*] and verify that it conforms to the [assignment: *alias metric*].**

Dependencies :No dependencies.

FPR_PSE.2 Reversible Pseudonymity

Hierarchical to: FPR_PSE.1

FPR_PSE.2.1 The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to determine the real user name bound to [assignment: *list of subjects and/or operations and/or objects*].

FPR_PSE.2.2 The TSF shall be able to provide [assignment: *number of aliases*] aliases of the real user name to [assignment: *list of subjects*].

FPR_PSE.2.3 The TSF shall [selection: *determine an alias for a user, accept the alias from the user*] and verify that it conforms to the [assignment: *alias metric*].

FPR_PSE.2.4 **The TSF shall provide [selection: *an authorised user*, [assignment*: list of trusted subjects*]] a capability to determine the user identity based on the provided alias only under the following [assignment: *list of conditions*].**

Dependencies :**FIA_UID.1 Timing of Identification**

FPR_PSE.3 Alias Pseudonymity

Hierarchical to: FPR_PSE.1

FPR_PSE.3.1 The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to determine the real user name bound to [assignment: *list of subjects and/or operations and/or objects*].

FPR_PSE.3.2 The TSF shall be able to provide [assignment: *number of aliases*] aliases of the real user name to [assignment: *list of subjects*].

FPR_PSE.3.3 The TSF shall [selection: *determine an alias for a user, accept the alias from the user*] and verify that it conforms to the [assignment: *alias metric*].

FPR_PSE.3.4 **The TSF shall provide an alias to the real user name which shall be identical to an alias provided previously under the following [assignment: *list of conditions*] otherwise the alias provided shall be unrelated to previously provided aliases.**

Dependencies :No dependencies.

9.3 Unlinkability (FPR_UNL)

Family behaviour

This family ensures that a user may make multiple uses of resources or services without others being able to link these uses together.

Component levelling

FPR_UNL.1 Unlinkability requires that users and/or subjects are unable to determine whether the same user caused certain specific operations in the system.

Management:

There are no management activities foreseen for this component.

Audit:

The following actions shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: The invocation of the unlinkability mechanism.

FPR_UNL.1 Unlinkability

Hierarchical to: no other components.

FPR_UNL.1.1 **The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to determine whether [assignment: *list of operations*] [selection: *were caused by the same user, are related as follows* [assignment: *list of relations*]].**

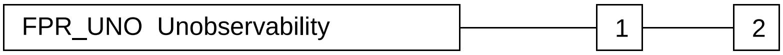
Dependencies :No dependencies.

9.4 Unobservability (FPR_UNO)

Family behaviour:

This family ensures that a user may use a resource or service without others, especially third parties, being able to observe that the resource or service is being used.

Component levelling



FPR_UNO.1 Unobservability requires that users and/or subjects cannot determine whether an object is being used.

FPR_UNO.2 Authorised User Observability requires the TSF to provide one or more authorised users with a capability to observe the usage of resources and/or services.

Management:

There are no management activities foreseen for these components.

Audit:

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: The invocation of the unobservability mechanism.

FPR_UNO.1 Unobservability

Hierarchical to: no other components.

FPR_UNO.1.1 **The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including, excluding*] authorised users, are unable to observe the operation [assignment: *list of operations*] on [assignment: *list of objects*] by another user or subject.**

Dependencies :No dependencies.

FPR_UNO.2 Authorised User Observability

Hierarchical to: FPR_UNO.1

FPR_UNO.2.1 The TSF shall ensure that [assignment: *set of users and/or subjects*], [selection: *including*, *excluding*] authorised users, are unable to observe the operation [assignment: *list of operations*] on [assignment: *list of objects*] by another user or subject.

FPR_UNO.2.2 **The TSF shall provide a [assignment: *set of authorised users*] with the capability to observe the usage of resources and/or services.**

Dependencies :No dependencies.

10 Class FPT: Protection of the TOE Security Functions

This class contains families of functional requirements that relate to the integrity and management of the mechanisms that provide the TSF (independent of TSP-specifics) and to the integrity of TSF data (independent of the specific contents of the TSP data). In some sense, families in this class may appear to duplicate components in the FDP (User Data Protection) class; they may even be implemented using the same mechanisms. However, FDP focuses on user data protection, while FPT focuses on TSF data protection. In fact, components from the FPT class are necessary to provide requirements that the SFPs in the TOE cannot be tampered with or bypassed.

From the point of view of this class, there are three significant portions for the TSF:

a) The TSF's *abstract machine*, which is the virtual or physical machine upon which the specific TSF implementation under evaluation executes.

b) The TSF's *implementation*, which executes on the abstract machine and implements the mechanisms that enforce the TSP.

c) The TSF's *data*, which are the administrative databases that guide the enforcement of the TSP.

D R A F T

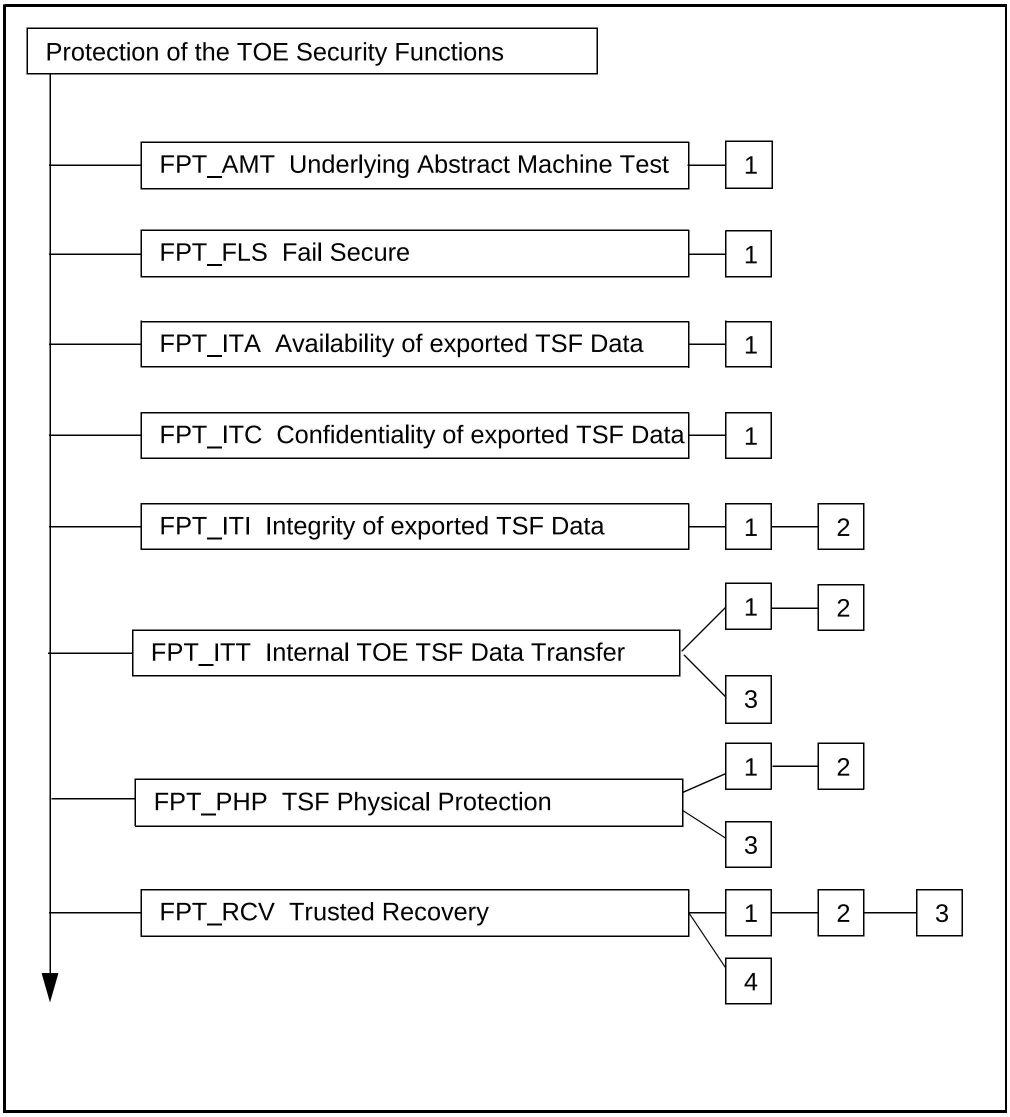

Protection of the TOE Security Functions
FPT_AMT Underlying Abstract Machine Test
1
FPT_FLS Fail Secure
1
FPT_ITA Availability of exported TSF Data
1
FPT_ITC Confidentiality of exported TSF Data
1
FPT_ITI Integrity of exported TSF Data
1
2
FPT_ITT Internal TOE TSF Data Transfer
1
2
3
FPT_PHP TSF Physical Protection
1
2
3
FPT_RCV Trusted Recovery
1
2
3
4

Figure 10.1 - Protection of the TOE Security Functions class decomposition

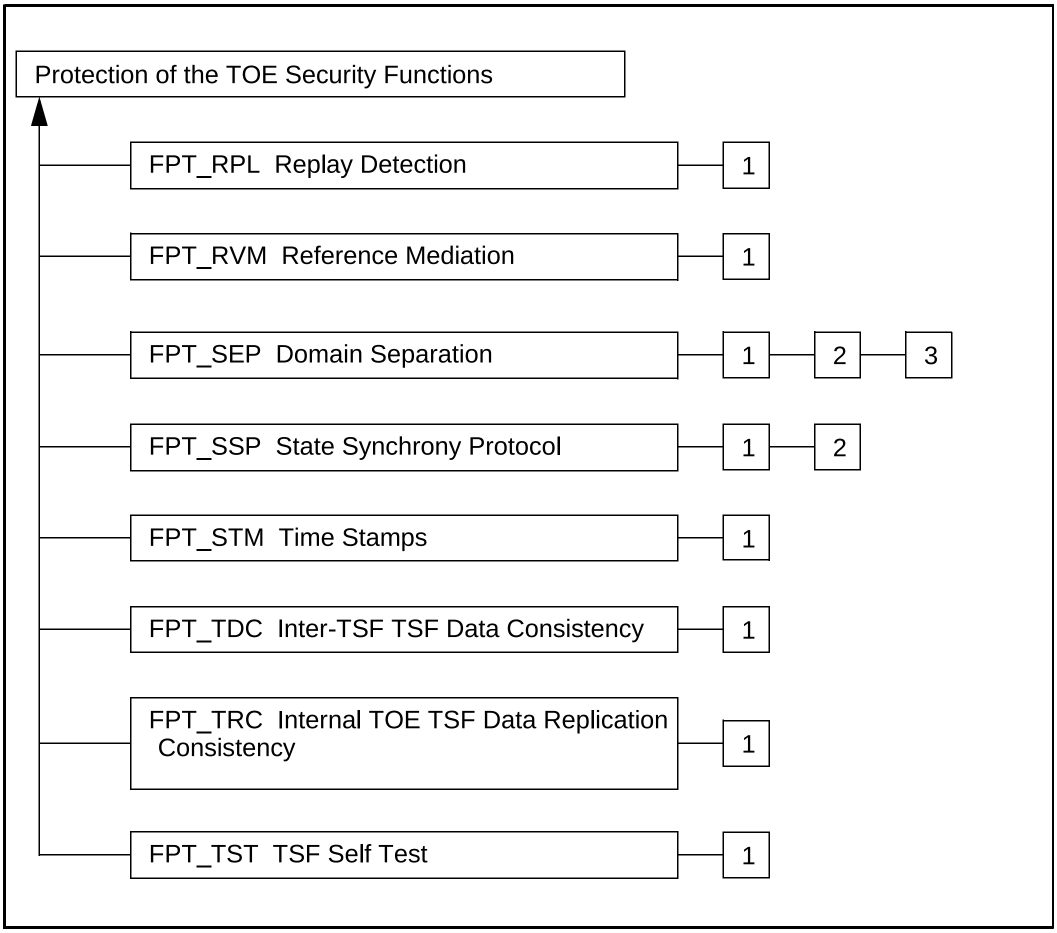

Protection of the TOE Security Functions
FPT_RPL Replay Detection
1
FPT_RVM Reference Mediation
1
FPT_SEP Domain Separation
1
2
3
FPT_SSP State Synchrony Protocol
1
2
FPT_STM Time Stamps
1
FPT_TDC Inter-TSF TSF Data Consistency
1
FPT_TRC Internal TOE TSF Data Replication Consistency
1
FPT_TST TSF Self Test
1

Figure 10.2 - Protection of the TOE Security Functions class decomposition (Cont.)

10.1 Underlying Abstract Machine Test (FPT_AMT)

Family behaviour

This family defines requirements for the TSF to perform testing to demonstrate the security assumptions made about the underlying abstract machine upon which the TSF relies. This “abstract” machine could be a hardware/firmware platform, or it could be some known and assessed hardware/software combination acting as a virtual machine.

Component levelling

FPT_AMT.1 Abstract Machine Testing, provides for testing of the underlying abstract machine.

Management: FPT_AMT.1

The following actions could be considered for the management functions in FMT:

a) management of the conditions under which abstract machine test occurs, such as during initial start-up, regular interval, or under specified conditions;

b) management of the time interval if appropriate.

Audit: FPT_AMT.1

The following actions should be audited if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Execution of the tests of the underlying machine and the results of the tests.

FPT_AMT.1 Abstract Machine Testing

Hierarchical to: no other components.

FPT_AMT.1.1 **The TSF shall run a suite of tests [selection: *during initial start-up, periodically during normal operation, at the request of an authorised user, other conditions*] to demonstrate the correct operation of the security assumptions provided by the abstract machine that underlies the TSF.**

Dependencies :No dependencies.

10.2 Fail Secure (FPT_FLS)

Family behaviour

The requirements of this family ensure that the TOE will not violate its TSP in the event of identified categories of failures in the TSF.

Component levelling

This family consists of only one component, FPT_FLS.1 Failure with Preservation of Secure State, which requires that the TSF preserve a secure state in the face of the identified failures.

Management: FPT_FLS.1

There are no management activities foreseen.

Audit: FPT_FLS.1

The following actions should be audited if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Failure of the TSF.

FPT_FLS.1 Failure with Preservation of Secure State

Hierarchical to: no other components.

FPT_FLS.1.1 **The TSF shall preserve a secure state when the following types of failures occur: [assignment: *list of types of failures in the TSF*].**

Dependencies :**ADV_SPM.1 Informal TOE security policy model**

10.3 Availability of exported TSF Data (FPT_ITA)

Family behaviour

This family defines the rules for the prevention of loss of availability of TSF data moving between the TSF and a remote trusted IT product. This data could, for example, be TSF critical data such as passwords, keys, audit data, or TSF executable code.

Component levelling

This family consists of only one component, FPT_ITA.1 Inter-TSF Availability Within a Defined Availability Metric. This component requires that the TSF ensure, to an identified degree of probability, the availability of TSF data provided to a remote trusted IT product.

Management: FPT_ITA.1

The following actions could be considered for the management functions in FMT:

a) management of the list of types of TSF data that must be available to a remote trusted IT product.

Audit: FPT_ITA.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: the absence of TSF data when required by a TOE.

FPT_ITA.1 Inter-TSF Availability Within a Defined Availability Metric

Hierarchical to: no other components.

FPT_ITA.1.1 **The TSF shall ensure the availability of [assignment: *list of types of TSF data*] provided to a remote trusted IT product within [assignment: *a defined availability metric*] given the following conditions [assignment: *conditions to ensure availability*].**

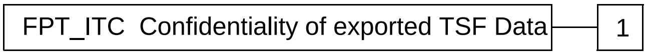
Dependencies :No dependencies.

10.4 Confidentiality of exported TSF Data (FPT_ITC)

Family behaviour

This family defines the rules for the protection from unauthorised disclosure of TSF data during transmission between the TSF and a remote trusted IT product. This data could, for example, be TSF critical data such as passwords, keys, audit data, or TSF executable code.

Component levelling



This family consists of only one component, FPT_ITC.1 Inter-TSF Confidentiality During Transmission, which requires that the TSF ensure that data transmitted between the TSF and a remote trusted IT product is protected from disclosure while in transit.

Management: FPT_ITC.1

There are no management activities foreseen.

Audit: FPT_ITC.1

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FPT_ITC.1 Inter-TSF Confidentiality During Transmission

Hierarchical to: no other components.

FPT_ITC.1.1 **The TSF shall protect all TSF data transmitted from the TSF to a remote trusted IT product from unauthorised disclosure during transmission.**

Dependencies :No dependencies.

10.5 Integrity of exported TSF Data (FPT_ITI)

Family behaviour

This family defines the rules for the protection, from unauthorised modification, of TSF data during transmission between the TSF and a remote trusted IT product. This data could, for example, be TSF critical data such as passwords, keys, audit data, or TSF executable code.

Component levelling

FPT_ITI Integrity of exported TSF Data
1
2

FPT_ITI.1 Inter-TSF Detection of Modification, provides the ability to detect modification of TSF data during transmission between the TSF and a remote trusted IT product, under the assumption that the remote trusted IT product is cognisant of the mechanism used.

FPT_ITI.2 Inter-TSF Detection and Correction of Modification, provides the ability for the remote trusted IT product not only to detect modification, but to correct modified TSF data under the assumption that the remote trusted IT product is cognisant of the mechanism used.

Management: FPT_ITI.1

There are no management activities foreseen.

Management: FPT_ITI.2

The following actions could be considered for the management functions in FMT:

a) management of the types of TSF data that the TSF should try to correct if modified in transit;

b) management of the types of action that the TSF could take if TSF data is modified in transit.

Audit: FPT_ITI.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: the detection of modification of transmitted TSF data.

b) Basic: the action taken upon detection of modification of transmitted TSF data.

Audit: FPT_ITI.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: the detection of modification of transmitted TSF data;

b) Basic: the action taken upon detection of modification of transmitted TSF data.

c) Basic: the use of the correction mechanism.

FPT_ITI.1 Inter-TSF Detection of Modification

Hierarchical to: no other components.

FPT_ITI.1.1 **The TSF shall provide the capability to detect modification of all TSF data during transmission between the TSF and a remote trusted IT product within the following metric: [assignment: *a defined modification metric*] .**

FPT_ITI.1.2 **The TSF shall provide the capability to verify the integrity of all TSF data transmitted between the TSF and a remote trusted IT product and perform [assignment: *action to be taken*] if modifications are detected.**

Dependencies :No dependencies.

FPT_ITI.2 Inter-TSF Detection and Correction of Modification

Hierarchical to: FPT_ITI.1

FPT_ITI.2.1 The TSF shall provide the capability to detect modification of all TSF data during transmission between the TSF and a remote trusted IT product within the following metric: [assignment: *a defined modification metric*] .

FPT_ITI.2.2 The TSF shall provide the capability verify the integrity of all TSF data transmitted between the TSF and a remote trusted IT product and perform [assignment: *action to be taken*] if modifications are detected.

FPT_ITI.2.3 **The TSF shall provide the capability to correct [assignment: *type of modification*] of all TSF data transmitted between the TSF and a remote trusted IT product.**

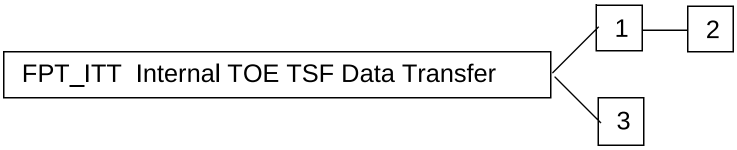
Dependencies :No dependencies.

10.6 Internal TOE TSF Data Transfer (FPT_ITT)

Family behaviour

This family provides requirements that address protection of TSF data when it is transferred between separate parts of a TOE across an internal channel.

Component levelling



FPT_ITT.1 Basic Internal TSF Data Transfer Protection, requires that TSF data be protected when transmitted between separate parts of the TOE.

FPT_ITT.2 TSF Data Transfer Separation, requires that the TSF separate user data from TSF data during transmission.

FPT_ITT.3 TSF Data Integrity Monitoring, requires that the TSF data transmitted between separate parts of the TOE is monitored for identified integrity errors.

Management: FPT_ITT.1

The following actions could be considered for the management functions in FMT:

a) management of the types of modification against which the TSF should protect;

b) management of the mechanism used to provide the protection of the data in transit between different parts of the TSF.

Management: FPT_ITT.2

The following actions could be considered for the management functions in FMT:

a) management of the types of modification against which the TSF should protect;

b) management of the mechanism used to provide the protection of the data in transit between different parts of the TSF;

c) management of the separation mechanism.

Management: FPT_ITT.3

The following actions could be considered for the management functions in FMT:

a) management of the types of modification against which the TSF should protect;

b) management of the mechanism used to provide the protection of the data in transit between different parts of the TSF;

c) management of the types of modification of TSF data the TSF should try to detect;

d) management of the actions that will be taken.

Audit: FPT_ITT.1, FPT_ITT.2

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

Audit: FPT_ITT.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: the detection of modification of TSF data.

FPT_ITT.1 Basic Internal TSF Data Transfer Protection

Hierarchical to: no other components.

FPT_ITT.1.1 **The TSF shall protect TSF data from [selection: *disclosure, modification*] when it is transmitted between separate parts of the TOE.**

Dependencies :No dependencies.

FPT_ITT.2 TSF Data Transfer Separation

Hierarchical to: FPT_ITT.1

FPT_ITT.2.1 The TSF shall protect TSF data from [selection: *disclosure*, *modification*] when it is transmitted between separate parts of the TOE.

FPT_ITT.2.2 **The TSF shall separate user data from TSF data when such data is transmitted between separate parts of the TOE.**

Dependencies :No dependencies.

FPT_ITT.3 TSF Data Integrity Monitoring

Hierarchical to: no other components.

FPT_ITT.3.1 **The TSF shall be able to detect [selection: *modification of data, substitution of data, re-ordering of data, deletion of data, other integrity errors*] for TSF data transmitted between separate parts of the TOE.**

FPT_ITT.3.2 **Upon detection of a data integrity error, the TSF shall take the following actions: [assignment: *specify the action to be taken*].**

Dependencies :FPT_ITT.1 Basic Internal TSF Data Transfer Protection

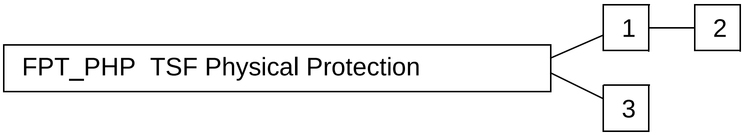
10.7 TSF Physical Protection (FPT_PHP)

Family behaviour

TSF physical protection components refer to restrictions on unauthorised physical access to the TSF, and to the deterrence of, and resistance to, unauthorised physical modification, or substitution of the TSF.

The requirements of components in this family ensure that the TSF is protected from physical tampering and interference. Satisfying the requirements of these components results in the TSF being packaged and used in such a manner that physical tampering is detectable, or resistance to physical tampering is enforced. Without these components, the protection functions of a TSF lose their effectiveness in environments where physical damage cannot be prevented. This family also provides requirements regarding how the TSF shall respond to physical tampering attempts.

Component levelling



FPT_PHP.1 Passive Detection of Physical Attack, provides for features that indicate when a TSF device or TSF element is subject to tampering. However, notification of tampering is not automatic; an authorised user must invoke a security administrative function or perform manual inspection to determining if tampering has occurred.

FPT_PHP.2 Notification of Physical Attack, provides for automatic notification of tampering for an identified subset of physical penetrations.

FPT_PHP.3 Resistance to Physical Attack, provides for features that prevent or resist physical tampering with TSF devices and TSF elements.

Management: FPT_PHP.1, FPT_PHP.3

There are no management activities foreseen.

Management: FPT_PHP.2

The following actions could be considered for the management functions in FMT:

a) management of the user or role that gets informed about intrusions;

b) management of the list of devices that should inform the indicated user or role about the intrusion.

Management: FPT_PHP.3

The following actions could be considered for the management functions in FMT:

a) management of the automatic responses to physical tampering.

Audit: FPT_PHP.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: if detection by IT means, detection of intrusion.

Audit: FPT_PHP.2,

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: detection of intrusion.

Audit: FPT_PHP.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) None.

FPT_PHP.1 Passive Detection of Physical Attack

Hierarchical to: no other components.

FPT_PHP.1.1 **The TSF shall provide unambiguous detection of physical tampering that might compromise the TSF.**

FPT_PHP.1.2 **The TSF shall provide the capability to determine whether physical tampering with the TSF's devices or TSF's elements has occurred.**

Dependencies :**FMT_MOF.1 Management of Security Functions Behaviour**

FPT_PHP.2 Notification of Physical Attack

Hierarchical to: FPT_PHP.1

FPT_PHP.2.1 The TSF shall provide unambiguous detection of physical tampering that might compromise the TSF.

FPT_PHP.2.2 The TSF shall provide the capability to determine whether physical tampering with the TSF's devices or TSF's elements has occurred.

FPT_PHP.2.3 **For [assignment: *list of TSF devices/elements for which active detection is required*], the TSF shall monitor the devices and elements and notify [assignment: *a designated user or role*] when physical tampering with the TSF's devices or TSF's elements has occurred.**

Dependencies :FMT_MOF.1 Management of Security Functions Behaviour

FPT_PHP.3 Resistance to Physical Attack

Hierarchical to: no other components.

FPT_PHP.3.1 **The TSF shall resist [assignment: *physical tampering scenarios*] to the [assignment: *list of TSF devices/elements*] by responding automatically such that the TSP is not violated.**

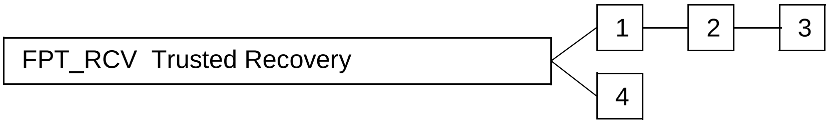
Dependencies :No dependencies.

10.8 Trusted Recovery (FPT_RCV)

Family behaviour

The requirements of this family ensure that the TSF can determine that the TOE is started up without protection compromise and can recover without protection compromise after discontinuity of operations. This family is important because the start-up state of the TSF determines the protection of subsequent states.

Component levelling



FPT_RCV.1 Manual Recovery, allows a TOE to only provide mechanisms that involve human intervention to return to a secure state.

FPT_RCV.2 Automated Recovery, provides, for at least one type of service discontinuity, recovery to a secure state without human intervention; recovery for other discontinuities may require human intervention.

FPT_RCV.3 Automated Recovery without Undue Loss, also provides for automated recovery, but strengthens the requirements by disallowing undue loss of protected objects.

FPT_RCV.4 Function Recovery, provides for recovery at the level of particular SFs, ensuring either successful completion or rollback of TSF data to a secure state.

Management: FPT_RCV.1

The following actions could be considered for the management functions in FMT:

a) management of who can access the restore capability within the maintenance mode.

Management: FPT_RCV.2, FPT_RCV.3

The following actions could be considered for the management functions in FMT:

a) management of who can access the restore capability within the maintenance mode;

b) management of the list of failures/service discontinuities that will be handled through the automatic procedures.

Management: FPT_RCV.4

There are no management activities foreseen.

Audit: FPT_RCV.1, FPT_RCV.2, FPT_RCV.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: the fact that a failure or service discontinuity occurred;

b) Minimal: resumption of the regular operation;

c) Basic: type of failure or service discontinuity.

Audit: FPT_RCV.4

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: if possible, the impossibility to return to a secure state after failure of a security function;

b) Basic: if possible, the detection of a failure of a security function.

FPT_RCV.1 Manual Recovery

Hierarchical to: no other components.

FPT_RCV.1.1 **After a failure or service discontinuity, the TSF shall enter a maintenance mode where the ability to return the TOE to a secure state is provided.**

Dependencies :**FPT_TST.1 TSF Testing**

AGD_INT.1 Administrator guidance

ADV_SPM.1 Informal TOE security policy model

FPT_RCV.2 Automated Recovery

Hierarchical to: FPT_RCV.1

FPT_RCV.2.1 **When automated recovery from** a failure or service discontinuity **is not possible**, the TSF shall enter a maintenance mode where the ability to return the TOE to a secure state is provided.

FPT_RCV.2.2 **For [assignment: *list of failures/service discontinuities*], the TSF shall ensure the return of the TOE to a secure state using automated procedures.**

Dependencies :FPT_TST.1 TSF Testing

AGD_INT.1 Administrator guidance

ADV_SPM.1 Informal TOE security policy model

FPT_RCV.3 Automated Recovery without Undue Loss

Hierarchical to: FPT_RCV.2

FPT_RCV.3.1 When automated recovery from a failure or service discontinuity is not possible, the TSF shall enter a maintenance mode where the ability to return the TOE to a secure state is provided.

FPT_RCV.3.2 For [assignment: *list of failures/service discontinuities*], the TSF shall ensure the return of the TOE to a secure state using automated procedures.

FPT_RCV.3.3 **The functions provided by the TSF to recover from failure or service discontinuity shall ensure that the secure initial state is restored without exceeding [assignment: *quantification*] for loss of TSF data or objects within the TSC.**

FPT_RCV.3.4 **The TSF shall provide the capability to determine the objects that were or were not capable of being recovered.**

Dependencies :FPT_TST.1 TSF Testing

AGD_INT.1 Administrator guidance

ADV_SPM.1 Informal TOE security policy model

FPT_RCV.4 Function Recovery

Hierarchical to: no other components.

FPT_RCV.4.1 **The TSF shall ensure that [assignment: *list of SFs and failure scenarios*] have the property that the SF either completes successfully, or for the indicated failure scenarios, recovers to a consistent and secure state.**

Dependencies :**ADV_SPM.1 Informal TOE security policy model**

10.9 Replay Detection (FPT_RPL)

Family behaviour

This family addresses detection of replay for various types of entities (e.g. messages, service requests, service responses) and subsequent actions to correct. In the case where replay may be detected, this effectively prevents it.

Component levelling

FPT_RPL Replay Detection
1

The family consists of only one component, FPT_RPL.1 Replay Detection, which requires that the TSF shall be able to detect the replay of identified entities.

Management: FPT_RPL.1

The following actions could be considered for the management functions in FMT:

a) management of the list of identified entities for which replay shall be detected;

b) management of the list of actions that need to be taken in case of relay.

Audit: FPT_RPL.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Basic: Detected replay attacks.

b) Detailed: Action to be taken based on the specific actions.

FPT_RPL.1 Replay Detection

Hierarchical to: no other components.

FPT_RPL.1.1 **The TSF shall detect replay for the following entities: [assignment: *list of identified entities*].**

FPT_RPL.1.2 **The TSF shall perform [assignment: *list of specific actions*] when replay is detected.**

Dependencies :No dependencies.

10.10 Reference Mediation (FPT_RVM)

Family behaviour

The requirements of this family address the “always invoked” aspect of a traditional reference monitor. The goal of this family is to ensure, with respect to a given SFP, that all actions requiring policy enforcement are validated by the TSF against the SFP. If the portion of the TSF that enforces the SFP also meets the requirements of appropriate components from FPT_SEP (Domain Separation) and ADV_INT (TSF internals), then that portion of the TSF provides a “reference monitor” for that SFP.

A TSF that implements a SFP provides effective protection against unauthorised operation if and only if all enforceable actions (e.g. accesses to objects) requested by untrusted subjects with respect to any or all of that SFP are validated by the TSF before succeeding. If an action that could be enforceable by the TSF, is incorrectly enforced or incorrectly bypassed, the overall enforcement of the SFP could be compromised. Subjects could then bypass the SFP in a variety of unauthorised ways (e.g. circumvent access checks for some subjects or objects, bypass checks for objects whose protection was assumed by applications, retain access rights beyond their intended lifetime, bypass auditing of audited actions, or bypass authentication). Note that some subjects, the so called “trusted subjects” with respect to a specific SFP, might be trusted to enforce the SFP by themselves, and bypass the mediation of the SFP.

Component levelling

This family consists of only one component, FPT_RVM.1 Non-Bypassability of the TSP, which requires non-bypassability for all SFPs in the TSP.

Management: FPT_RVM.1

There are no management activities foreseen.

Audit: FPT_RVM.1

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FPT_RVM.1 Non-Bypassability of the TSP

Hierarchical to: no other components.

FPT_RVM.1.1 **The TSF shall ensure that TSP enforcement functions are invoked and succeed before each function within the TSC is allowed to proceed.**

Dependencies :No dependencies.

10.11 Domain Separation (FPT_SEP)

Family behaviour

The components of this family ensure that at least one security domain is available for the TSF's own execution and that the TSF is protected from external interference and tampering (e.g. by modification of TSF code or data structures) by untrusted subjects. Satisfying the requirements of this family makes the TSF self-protecting, meaning that an untrusted subject cannot modify or damage the TSF.

This family requires the following:

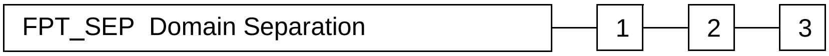
a) The resources of the TSF's security domain ("protected domain") and those of subjects and unconstrained entities external to the domain are separated such that the entities external to the protected domain cannot observe or modify TSF data or TSF code internal to the protected domain.

b) The transfers between domains are controlled such that arbitrary entry to, or return from, the protected domain is not possible.

c) The user or application parameters passed to the protected domain by addresses are validated with respect to the protected domain's address space, and those passed by value are validated with respect to the values expected by the protected domain.

d) The security domains of subjects are distinct except for controlled sharing via the TSF.

Component levelling



FPT_SEP.1 TSF Domain Separation, provides a distinct protected domain for the TSF and provides separation between subjects within the TSC.

FPT_SEP.2 SFP Domain Separation, requires that the TSF be further subdivided, with distinct domain(s) for an identified set of SFPs that act as reference monitors for their policies, and a domain for the remainder of the TSF, as well as domains for the non-TSF portions of the TOE.

FPT_SEP.3 Complete Reference Monitor, requires that there be distinct domain(s) for TSP enforcement, a domain for the remainder of the TSF, as well as domains for the non-TSF portions of the TOE.

Management: FPT_SEP.1, FPT_SEP.2, FPT_SEP.3

There are no management activities foreseen.

Audit: FPT_SEP.1, FPT_SEP.2, FPT_SEP.3

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FPT_SEP.1 TSF Domain Separation

Hierarchical to: no other components.

FPT_SEP.1.1 **The TSF shall maintain a security domain for its own execution that protects it from interference and tampering by untrusted subjects.**

FPT_SEP.1.2 **The TSF shall enforce separation between the security domains of subjects in the TSC.**

Dependencies :No dependencies.

FPT_SEP.2 SFP Domain Separation

Hierarchical to: FPT_SEP.1

FPT_SEP.2.1 The **unisolated portion of the** TSF shall maintain a security domain for its own execution that protects it from interference and tampering by untrusted subjects.

FPT_SEP.2.2 The TSF shall enforce separation between the security domains of subjects in the TSC.

FPT_SEP.2.3 **The TSF shall maintain the part of the TSF related to [assignment: *list of access control and/or information flow control SFPs*] in a security domain for their own execution that protects them from interference and tampering by the remainder of the TSF and by subjects untrusted with respect to those SFPs.**

Dependencies :No dependencies.

FPT_SEP.3 Complete Reference Monitor

Hierarchical to: FPT_SEP.2

FPT_SEP.3.1 The unisolated portion of the TSF shall maintain a security domain for its own execution that protects it from interference and tampering by untrusted subjects.

FPT_SEP.3.2 The TSF shall enforce separation between the security domains of subjects in the TSC.

FPT_SEP.3.3 The TSF shall maintain **the part of the TSF that enforces the access control and/or information flow control SFPs** in a security domain for **its** own execution that protects **them** from interference and tampering by the remainder of the TSF and by subjects untrusted with respect to **the TSP**.

Dependencies :No dependencies.

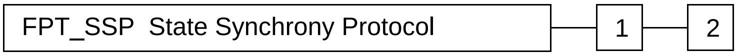
10.12 State Synchrony Protocol (FPT_SSP)

Family behaviour

Distributed systems may give rise to greater complexity than monolithic systems through the potential for differences in state between parts of the system, and through delays in communication. In most cases synchronisation of state between distributed functions involves an exchange protocol, not a simple action. When malice exists in the distributed environment of these protocols, more complex defensive protocols are required.

FPT_SSP establishes the requirement for certain critical security functions of the TSF to use this trusted protocol. FPT_SSP ensures that two distributed parts of the TOE (e.g. hosts) have synchronised their states after a security-relevant action.

Component levelling



FPT_SSP.1 Simple Trusted Acknowledgement requires only a simple acknowledgment by the data recipient.

FPT_SSP.2 Mutual Trusted Acknowledgement requires mutual acknowledgment of the data exchange.

Management: FPT_SSP.1, FPT_SSP.2

There are no management activities foreseen.

Audit: FPT_SSP.1, FPT_SSP.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: failure to receive an acknowledgement when expected.

FPT_SSP.1 Simple Trusted Acknowledgement

Hierarchical to: no other components.

FPT_SSP.1.1 **The TSF shall acknowledge, when requested by another part of the TSF, the receipt of an unmodified TSF data transmission.**

Dependencies :**FPT_ITT.1 Basic Internal TSF Data Transfer Protection**

FPT_SSP.2 Mutual Trusted Acknowledgement

Hierarchical to: FPT_SSP.1

FPT_SSP.2.1 The TSF shall acknowledge, when requested by another part of the TSF, the receipt of an unmodified TSF data transmission.

FPT_SSP.2.2 **The TSF shall ensure that the relevant parts of the TSF know the correct status of transmitted data among its different parts, using acknowledgements.**

Dependencies :FPT_ITT.1 Basic Internal TSF Data Transfer Protection

10.13 Time Stamps (FPT_STM)

Family behaviour

This family addresses requirements for a reliable time stamp function within a TOE.

Component levelling

This family consists of only one component, FPT_STM.1 Reliable Time Stamps, which requires that the TSF provide reliable time stamps for TSF functions.

Management: FPT_STM.1

The following actions could be considered for the management functions in FMT:

a) management of the time.

Audit: FPT_STM.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: changes to the time;

b) Detailed: providing a timestamp.

FPT_STM.1 Reliable Time Stamps

Hierarchical to: no other components.

FPT_STM.1.1 The TSF shall be able to provide reliable time stamps for its own use.

Dependencies :No dependencies.

10.14 Inter-TSF TSF Data Consistency(FPT_TDC)

Family behaviour

In a distributed or composite system environment, a TOE may need to exchange TSF data (e.g. the SFP-attributes associated with data, audit information, identification information) with another trusted IT product. This family defines the requirements for sharing and consistent interpretation of these attributes between the TSF of the TOE and a different trusted IT product. 0

Component levelling

FPT_TDC Inter-TSF TSF Data Consistency
1

FPT_TDC.1 Inter-TSF Basic TSF Data Consistency requires that the TSF provide the capability to ensure consistency of attributes between TSFs.

Management: FPT_TDC.1

There are no management activities foreseen.

Audit: FPT_TDC.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: Successful use of TSF data consistency mechanisms.

b) Basic: Use of the TSF data consistency mechanisms.

c) Basic: Identification of which TSF data have been interpreted.

d) Basic: Detection of modified TSF data.

FPT_TDC.1 Inter-TSF Basic TSF Data Consistency

Hierarchical to: no other components.

FPT_TDC.1.1 **The TSF shall provide the capability to consistently interpret [assignment: *list of TSF data types*] when shared between the TSF and another trusted IT product.**

FPT_TDC.1.2 **The TSF shall use [assignment: *list of interpretation rules to be applied by the TSF*] when interpreting the TSF data from another trusted IT product.**

Dependencies :No dependencies.

10.15 Internal TOE TSF Data Replication Consistency (FPT_TRC)

Family behaviour

The requirements of this family are needed to ensure the consistency of TSF data when such data is replicated internal to the TOE. Such data may become inconsistent if the internal channel between parts of the TOE becomes inoperative. If the TOE is internally structured as a network and parts of the TOE network connections are broken, this may occur when parts become disabled.

Component levelling

This family consists of only one component, FPT_TRC.1 Internal TSF Consistency, which requires that the TSF ensure the consistency of TSF data that is replicated in multiple locations.

Management: for FPT_TRC.1

There are no management activities foreseen.

Audit: for FPT_TRC.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: restoring consistency upon reconnection.

b) Basic: Detected inconsistency between TSF data.

FPT_TRC.1 Internal TSF Consistency

Hierarchical to: no other components.

FPT_TRC.1.1 **The TSF shall ensure that TSF data is consistent when replicated between parts of the TOE.**

FPT_TRC.1.2 **When parts of the TOE containing replicated TSF data are disconnected, the TSF shall ensure the consistency of the replicated TSF data upon reconnection before processing any requests for [assignment: *list of SFs dependent on TSF data replication consistency*].**

Dependencies :**FPT_ITT.1 Basic Internal TSF Data Transfer Protection**

10.16 TSF Self Test (FPT_TST)

Family behaviour

The family defines the requirements for the self-testing of the TSF with respect to some expected correct operation. Examples are interfaces to enforcement functions, and sample arithmetical operations on critical parts of the TOE. These tests can be carried out at start-up, periodically, at the request of the authorised user, or when other conditions are met. The actions to be taken by the TOE as the result of self testing are defined in other families.

The requirements of this family are also needed to detect the corruption of TSF executable code (i.e., TSF software) and TSF data by various failures that do not necessarily stop the TOE's operation (which would be handled by other families). These checks must be performed because these failures may not necessarily be prevented. Such failures can occur either because of unforeseen failure modes or associated oversights in the design of hardware, firmware, or software, or because of malicious corruption of the TSF due to inadequate logical and/or physical protection.

Component levelling

FPT_TST TSF Self Test
1

FPT_TST.1 TSF Testing, provides the ability to test the TSF’s correct operation. These tests may be performed at start-up, periodically, at the request of the authorised user, or when other conditions are met. It also provides the ability to verify the integrity of TSF data and executable code.

Management: for FPT_TST.1

The following actions could be considered for the management functions in FMT:

a) management of the conditions under which TSF self testing occurs, such as during initial start-up, regular interval, or under specified conditions;

b) management of the time interval if appropriate.

Audit: for FPT_TST.1

The following actions should be audited if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Basic: Execution of theTSF self tests and the results of the tests.

FPT_TST.1 TSF Testing

Hierarchical to: no other components.

FPT_TST.1.1 **The TSF shall run a suite of self tests [selection: *during initial start-up, periodically during normal operation, at the request of the authorised user, at the conditions [assignment: conditions under which self test should occur]*] to demonstrate the correct operation of the TSF.**

FPT_TST.1.2 **The TSF shall provide authorised users with the capability to verify the integrity of TSF data.**

FPT_TST.1.3 **The TSF shall provide authorised users with the capability to verify the integrity of stored TSF executable code.**

Dependencies :**FPT_AMT.1 Abstract Machine Testing**

11 Class FRU: Resource Utilisation

This class provides three families that support the availability of required resources such as processing capability and/or storage capacity. The family Fault Tolerance provides protection against unavailability of capabilities caused by failure of the TOE. The family Priority of Service ensures that the resources will be allocated to the more important or time-critical tasks and cannot be monopolised by lower priority tasks. The family Resource Allocation provides limits on the use of available resources, therefore preventing users from monopolising the resources.

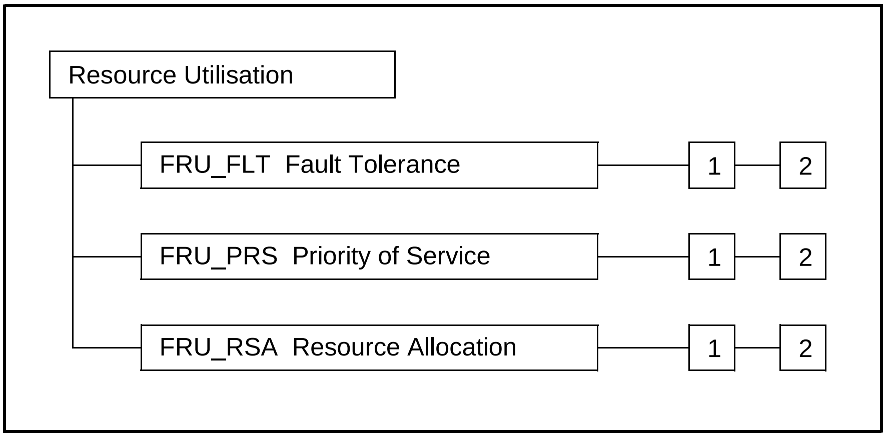


Figure 11.1 - Resource Utilisation class decomposition

11.1 Fault Tolerance (FRU_FLT)

Family behaviour

The requirements of this family ensure that the TOE will maintain correct operation even in the event of failures.

Component levelling

FRU_FLT Fault Tolerance
1
2

FRU_FLT.1 Degraded Fault Tolerance requires the TOE to continue correct operation of identified capabilities in the event of identified failures.

FRU_FLT.2 Limited Fault Tolerance requires the TOE to continue correct operation of all capabilities in the event of identified failures.

Management: FRU_FLT.1, FRU_FLT.2

There are no management activities foreseen.

Audit: for FRU_FLT.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Any failure detected by the TSF.

b) Basic: All TOE capabilities being discontinued due to a failure.

Audit: for FRU_FLT.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Any failure detected by the TSF.

FRU_FLT.1 Degraded Fault Tolerance

Hierarchical to: no other components.

FRU_FLT.1.1 **The TSF shall ensure the operation of [assignment: *list of TOE capabilities*] when the following failures occur: [assignment: *list of type of failures*].**

Dependencies :**FPT_FLS.1 Failure with Preservation of Secure State**

FRU_FLT.2 Limited Fault Tolerance

Hierarchical to: FRU_FLT.1

FRU_FLT.2.1 The TSF shall ensure the operation of **all the TOE's capabilities** when [assignment: *list of type of failures*] occur.

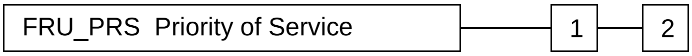
Dependencies :FPT_FLS.1 Failure with Preservation of Secure State

11.2 Priority of Service (FRU_PRS)

Family behaviour

The requirements of this family allow the TSF to control the use of resources within the TSC by users and subjects such that high priority activities within the TSC will always be accomplished without undue interference or delay caused by low priority activities.

Component levelling



FRU_PRS.1 Limited Priority of Service provides priorities for a subject's use of a subset of the resources within the TSC.

FRU_PRS.2 Full Priority of Service provides priorities for a subject's use of all of the resources within the TSC.

Management: for FRU_PRS.1, FRU_PRS.2

The following actions could be considered for the management activities in FMT:

a) assignment of priorities to each subject in the TSF.

Audit: for FRU_PRS.1, FRU_PRS.2

The following actions shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Rejection of operation based on the use of priority within an allocation.

b) Basic: All attempted uses of the allocation function which involves the priority of the service functions.

FRU_PRS.1 Limited Priority of Service

Hierarchical to: no other components.

FRU_PRS.1.1 The TSF shall assign a priority to each subject in the TSF.

FRU_PRS.1.2 The TSF shall ensure that each access to [assignment: *controlled resources*] shall be mediated on the basis of the subjects assigned priority.

Dependencies :No dependencies.

FRU_PRS.2 Full Priority of Service

Hierarchical to: FRU_PRS.1

FRU_PRS.2.1 The TSF shall assign a priority to each subject in the TSF.

FRU_PRS.2.2 The TSF shall ensure that each access to **all shareable resources** shall be mediated on the basis of the subjects assigned priority.

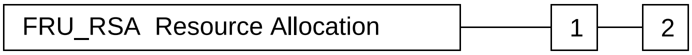
Dependencies :No dependencies.

11.3 Resource Allocation (FRU_RSA)

Family behaviour

The requirements of this family allow the TSF to control the use of resources by users and subjects such that denial of service will not occur because of unauthorised monopolisation of resources.

Component levelling



FRU_RSA.1 Maximum Quotas provides requirements for quota mechanisms that ensure that users and subjects will not monopolise a controlled resource.

FRU_RSA.2 Minimum and Maximum Quotas provides requirements for quota mechanisms that ensure that users and subjects will always have at least a minimum of a specified resource and that they will not be able to monopolise a controlled resource.

Management: for FRU_RSA.1

The following actions could be considered for the management activities in FMT:

a) specifying maximum limits for a resource for groups and/or individual users and/or subjects by an administrator.

Management: for FRU_RSA.2

The following actions could be considered for the management activities in FMT:

a) specifying minimum and maximum limits for a resource for groups and/or individual users and/or subjects by an administrator.

Audit: for FRU_RSA.1 and FRU_RSA.2

The following actions shall be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Rejection of allocation operation due to resource limits.

b) Basic: All attempted uses of the resource allocation functions for resources that are under control of the TSF.

FRU_RSA.1 Maximum Quotas

Hierarchical to: no other components.

FRU_RSA.1.1 The TSF shall enforce maximum quotas of the following resources: [assignment: *controlled resources*] that [selection: *individual user, defined group of users, subjects*] can use [selection: *simultaneously, over a specified period of time*].

Dependencies :No dependencies.

FRU_RSA.2 Minimum and Maximum Quotas

Hierarchical to: FRU_RSA.1

FRU_RSA.2.1 The TSF shall enforce maximum quotas of the following resources [assignment: *controlled resources*] that [selection: *individual user, defined group of users*] can use [selection: *simultaneously, over a specified period of time*].

FRU_RSA.2.2 The TSF shall ensure the provision of minimum quantity of each [assignment: *controlled resource*] that is available for [selection: *an individual user, defined group of users, subjects*] to use [selection: *simultaneously, over a specified period of time*]

Dependencies :No dependencies.

12 Class FTA: TOE Access

This family specifies functional requirements for controlling the establishment of a user’s session.

Figure 12.1 shows the decomposition of this class into its constituent components.

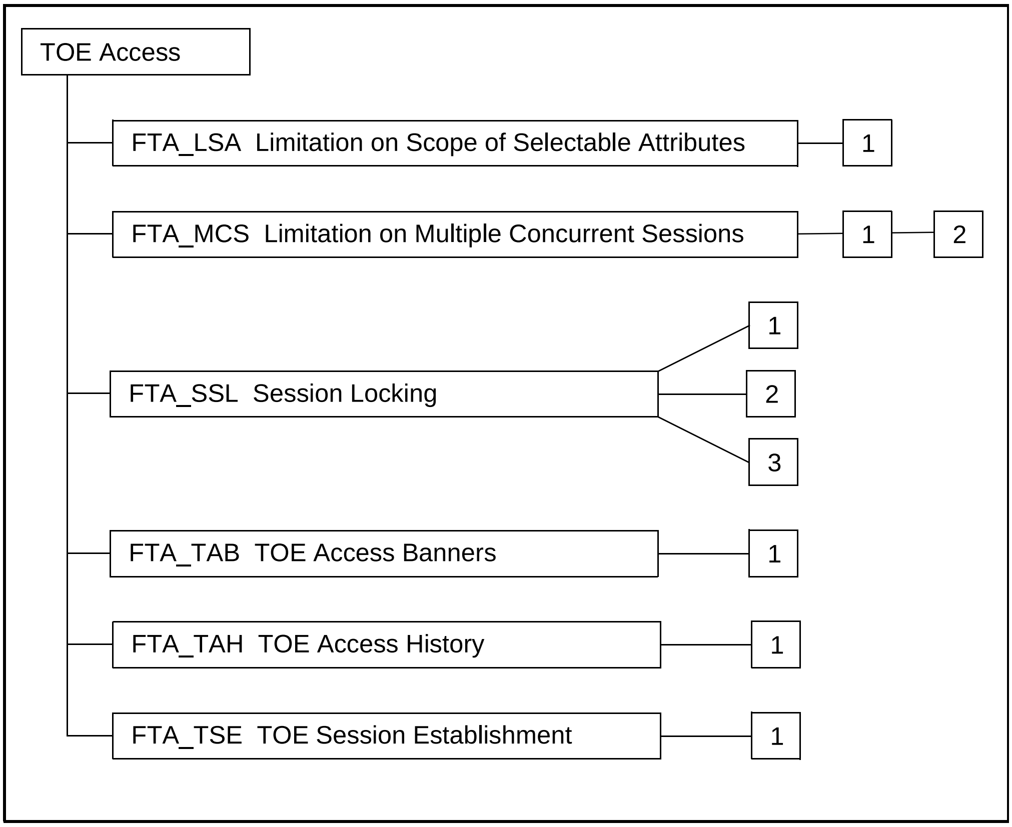

TOE Access
FTA_LSA Limitation on Scope of Selectable Attributes
1
FTA_MCS Limitation on Multiple Concurrent Sessions
1
2
FTA_SSL Session Locking
1
2
3
FTA_TAB TOE Access Banners
1
FTA_TAH TOE Access History
1
FTA_TSE TOE Session Establishment
1

Figure 12.1 - TOE Access class decomposition

12.1 Limitation on Scope of Selectable Attributes (FTA_LSA)

Family behaviour

This family defines requirements to limit the scope of session security attributes that a user may select for a session.

Component levelling

FTA_LSA.1 Limitation on Scope of Selectable Attributes provides the requirement for a TOE to limit the scope of the session security attributes during session establishment.

Management: FTA_LSA.1

The following actions could be considered for the management activities in FMT:

a) management of the scope of the session security attributes by an administrator.

Audit: FTA_LSA.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: All failed attempts at selecting a session security attributes;

b) Basic: All attempts at selecting a session security attributes;

c) Detailed: Capture of the values of each session security attributes.

FTA_LSA.1 Limitation on Scope of Selectable Attributes

Hierarchical to: no other components.

FTA_LSA.1.1 The TSF shall restrict the scope of the session security attributes [assignment: *session security attributes*], based on [assignment: *attributes*].

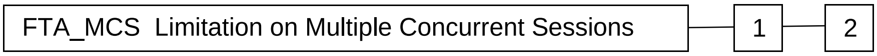
Dependencies :No dependencies.

12.2 Limitation on Multiple Concurrent Sessions (FTA_MCS)

Family behaviour

This family defines requirements to place limits on the number of concurrent sessions that belong to the same user.

Component levelling



FTA_MCS.1 Basic Limitation on Multiple Concurrent Sessions provides limitations that apply to all users of the TSF.

FTA_MCS.2 Per User Attribute Limitation on Multiple Concurrent Sessions extends FTA_MCS.1 by requiring the ability to specify limitations on the number of concurrent sessions based on the related security attributes.

Management: FTA_MCS.1

The following actions could be considered for the management activities in FMT:

a) management of the maximum allowed number of concurrent user sessions by an administrator.

Management: FTA_MCS.2

The following actions could be considered for the management activities in FMT:

a) management of the rules that govern the maximum allowed number of concurrent user sessions by an administrator.

Audit: FTA_MCS.1, FTA_MCS.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Rejection of a new session based on the limitation of multiple concurrent sessions.

b) Detailed: Capture of the number of currently concurrent user sessions and the user security attribute(s).

FTA_MCS.1 Basic Limitation on Multiple Concurrent Sessions

Hierarchical to: no other components.

FTA_MCS.1.1 **The TSF shall restrict the maximum number of concurrent sessions that belong to the same user.**

FTA_MCS.1.2 **The TSF shall enforce, by default, a limit of [assignment: *default number*] sessions per user.**

Dependencies :**FIA_UID.1 Timing of Identification**

FTA_MCS.2 Per User Attribute Limitation on Multiple Concurrent Sessions

Hierarchical to: FTA_MCS.1

FTA_MCS.2.1 The TSF shall restrict the maximum number of concurrent sessions that belong to the same user **according to the rules [assignment: *rules for the number of maximum concurrent sessions*].**

FTA_MCS.2.2 The TSF shall enforce, by default, a limit of [assignment: *default number*] sessions per user.

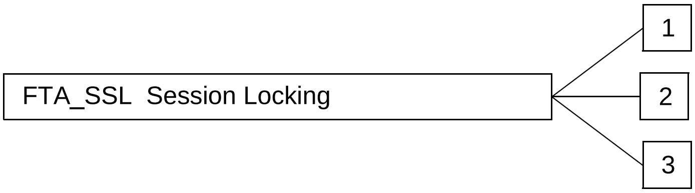
Dependencies :**FIA_UID.1 Timing of Identification**

12.3 Session Locking (FTA_SSL)

Family behaviour

This family defines requirements for the TSF to provide the capability for TSF-initiated and user-initiated locking and unlocking of interactive sessions.

Component levelling



FTA_SSL.1 TSF-initiated Session Locking includes system initiated locking of an interactive session after a specified period of user inactivity.

FTA_SSL.2 User-initiated Locking provides capabilities for the user to lock and unlock the user's own interactive sessions.

FTA_SSL.3 TSF-initiated Termination provides requirements for the TSF to terminate the session after a period of user inactivity.

Management: FTA_SSL.1

The following actions could be considered for the management activities in FMT:

a) specification of the time of user inactivity after which lock-out occurs for an individual user;

b) specification of the default time of user inactivity after which lock-out occurs;

c) management of the events that should occur prior to unlocking the session.

Management: FTA_SSL.2

The following actions could be considered for the management activities in FMT:

a) management of the events that should occur prior to unlocking the session.

Management: FTA_SSL.3

The following actions could be considered for the management activities in FMT:

a) specification of the time of user inactivity after which termination of the interactive session occurs for an individual user;

b) specification of the default time of user inactivity after which termination of the interactive session occurs.

Audit: FTA_SSL.1, FTA_SSL.2

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Locking of an interactive session by the session locking mechanism.

b) Minimal: Successful unlocking of an interactive session.

c) Basic: Any attempts at unlocking an interactive session.

Audit: FTA_SSL.3

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Termination of an interactive session by the session locking mechanism.

FTA_SSL.1 TSF-initiated Session Locking

Hierarchical to: no other components.

FTA_SSL.1.1 **The TSF shall lock an interactive session after [assignment: *time interval of user inactivity*] by:**

a) clearing or overwriting display devices, making the current contents unreadable;

b) disabling any activity of the user's data access/display devices other than unlocking the session.

FTA_SSL.1.2 **The TSF shall require the following events to occur prior to unlocking the session: [assignment: *events to occur]* .**

Dependencies :**FIA_UAU.1 Timing of authentication**

FTA_SSL.2 User-initiated Locking

Hierarchical to: no other components.

FTA_SSL.2.1 **The TSF shall allow user-initiated locking of the user's own interactive session, by:**

a) clearing or overwriting display devices, making the current contents unreadable;

b) **disabling any activity of the user's data access/display devices other than unlocking the session.**

FTA_SSL.2.2 **The TSF shall require the following events to occur prior to unlocking the session: [assignment:** ***events to occur]*** **.**

Dependencies :**FIA_UAU.1 Timing of authentication**

FTA_SSL.3 TSF-initiated Termination

Hierarchical to: no other components.

FTA_SSL.3.1 **The TSF shall terminate an interactive session after a [assignment:** ***time interval of user inactivity*****].**

Dependencies :No dependencies.

12.4 TOE Access Banners (FTA_TAB)

Family behaviour

This family defines requirements to display a configurable advisory warning message to users regarding the appropriate use of the TOE.

Component levelling

FTA_TAB.1 Default TOE Access Banners provides the requirement for a TOE Access Banner. This banner is displayed prior to the establishment dialogue for a session.

Management: FTA_TAB.1

The following actions could be considered for the management activities in FMT:

a) maintenance of the banner by the authorised administrator.

Audit: FTA_TAB.1

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FTA_TAB.1 Default TOE Access Banners

Hierarchical to: no other components.

FTA_TAB.1.1 **Before establishing a user session, the TSF shall display an advisory warning message regarding unauthorised use of the TOE.**

Dependencies :No dependencies.

12.5 TOE Access History (FTA_TAH)

Family behaviour

This family defines requirements for the TSF to display to a user, upon successful session establishment, a history of successful and unsuccessful attempts to access the user’s account.

Component levelling

FTA_TAH.1 TOE Access History provides the requirement for a TOE to display information related to previous attempts to establish a session.

Management: FTA_TAH.1

There are no management activities foreseen.

Audit: FTA_TAH.1

There are no actions identified that should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST.

FTA_TAH.1 TOE Access History

Hierarchical to: no other components.

FTA_TAH.1.1 **Upon successful session establishment, the TSF shall display the [selection: *date, time, method, location*] of the last successful session establishment to the user.**

FTA_TAH.1.2 **Upon successful session establishment, the TSF shall display the [selection: *date, time, method, location*] of the last unsuccessful attempt to session establishment and the number of unsuccessful attempts since the last successful session establishment.**

FTA_TAH.1.3 **The TSF shall not erase the access history information from the user interface without giving the user an opportunity to review the information.**

Dependencies :No dependencies.

12.6 TOE Session Establishment (FTA_TSE)

Family behaviour

This family defines requirements to deny a user permission to establish a session with the TOE.

Component levelling

FTA_TSE.1 TOE Session Establishment provides requirements for denying users access to the TOE based on attributes.

Management: FTA_TSE.1

The following actions could be considered for the management activities in FMT:

a) management of the session establishment conditions by the authorised administrator.

Audit: FTA_TSE.1

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP/ST:

a) Minimal: Denial of a session establishment due to the session establishment mechanism.

b) Basic: All attempts at establishment of a user session.

c) Detailed: Capture of the value of the selected access parameters (e.g. location of access, time of access).

FTA_TSE.1 TOE Session Establishment

Hierarchical to: no other components.

FTA_TSE.1.1 **The TSF shall be able to deny session establishment based on [assignment: *attributes*].**

Dependencies :No dependencies.

13 Class FTP: Trusted Path/Channels

Families in this class provide requirements for a trusted communication path between users and the TSF, and for a trusted communication channel between the TSF and other trusted IT products. Trusted paths and channels have the following general characteristics:

- The communications path is constructed using internal and external communications channels (as appropriate for the component) that isolate an identified subset of TSF data and commands from the remainder of the TSF and user data.

- Use of the communications path may be initiated by the user and/or the TSF (as appropriate for the component)

- The communications path is capable of providing assurance that the user is communicating with the correct TSF, and that the TSF is communicating with the correct user (as appropriate for the component)

In this paradigm, a ***trusted channel*** is a communication channel that may be initiated by either side of the channel, and provides non-repudiation characteristics with respect to the identity of the sides of the channel.

A ***trusted path*** provides a means for users to perform functions through an assured direct interaction with the TSF. Trusted path is usually desired for user actions such as initial identification and/or authentication, but may also be desired at other times during a user’s session. Trusted path exchanges may be initiated by a user or the TSF. User responses via the trusted path are guaranteed to be protected from modification by or disclosure to untrusted applications.

Figure 13.1 shows the decomposition of this class into its constituent components.

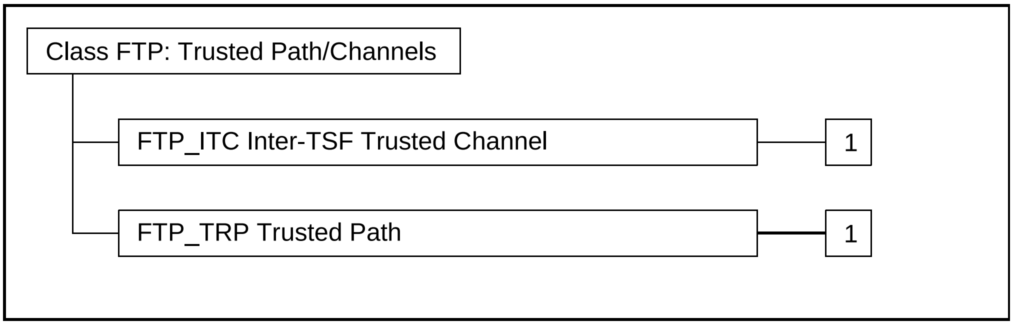

Class FTP: Trusted Path/Channels
FTP_ITC Inter-TSF Trusted Channel
1
FTP_TRP Trusted Path
1

Figure 13.1 - Trusted Path / Channels Class decomposition

13.1 Inter-TSF Trusted Channel (FTP_ITC)

Family behaviour

This family defines requirements for the creation of a trusted channel between the TSF and other trusted IT products for the performance of security critical operations. This family should be included whenever there are requirements for the secure communication of user or TSF data between the TOE and other trusted IT products.

Component levelling

FTP_ITC.1 Inter-TSF Trusted Channel requires that the TSF provide a trusted communication channel between itself and another trusted IT product.

Management:

The following actions could be considered for the management functions in FMT:

a) Configuring the actions that require trusted channel, if supported.

Audit:

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: Failure of the trusted channel functions.

b) Minimal: Identification of the initiator and target of failed trusted channel functions.

c) Basic: All attempted uses of the trusted channel functions.

d) Basic: Identification of the initiator and target of all trusted channel functions.

FTP_ITC.1 Inter-TSF Trusted Channel

Hierarchical to: no other components.

FTP_ITC.1.1 **The TSF shall provide a communication channel between itself and a remote trusted IT product that is logically distinct from other communication channels and provides assured identification of its end points and protection of the channel data from modification or disclosure.**

FTP_ITC.1.2 **The TSF shall permit [selection: *the TSF, the remote trusted IT product*] to initiate communication via the trusted channel.**

FTP_ITC.1.3 **The TSF shall initiate communication via the trusted channel for [assignment: *list of functions for which a trusted channel is required*].**

Dependencies :No dependencies.

13.2 Trusted Path (FTP_TRP)

Family behaviour

This family defines the requirements to establish and maintain trusted communication to or from users and the TSF. A trusted path may be required for any security-relevant interaction. Trusted path exchanges may be initiated by a user during an interaction with the TSF, or the TSF may establish communication with the user via a trusted path.

Component levelling

FTP_TRP Trusted Path
1

FTP_TRP.1 Trusted Path requires that a trusted path between the TSF and a user be provided for a set of events defined by a PP/ST author. The user and/or the TSF may have the ability to initiate the trusted path.

Management:

The following actions could be considered for the management functions in FMT:

a) Configuring the actions that require trusted path, if supported.

Audit:

The following actions should be auditable if FAU_GEN Security Audit Data Generation is included in the PP / ST:

a) Minimal: Failures of the trusted path functions.

b) Minimal: Identification of the user associated with all trusted path failures, if available.

c) Basic: All attempted uses of the trusted path functions.

d) Basic: Identification of the user associated with all trusted path invocations, if available.

FTP_TRP.1 Trusted Path

Hierarchical to: no other components.

FTP_TRP.1.1 **The TSF shall provide a communication path between itself and [selection: *remote, local*] users that is logically distinct from other communication paths and provides assured identification of its end points and protection of the communicated data from modification or disclosure.**

FTP_TRP.1.2 **The TSF shall permit [selection: *the TSF*, *local users*, *remote users*] to initiate communication via the trusted path.**

FTP_TRP.1.3 **The TSF shall require the use of the trusted path for [selection: *initial user authentication*, [assignment: *other services for which trusted path is required*]].**

Dependencies :No dependencies.